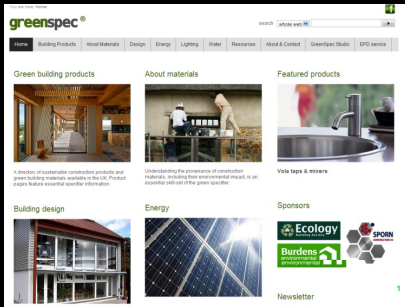


Kier Waste Cost Diagrams (Full)

Waste Definitions
On-site or off-site segregation
Transfer & Bulking stations
Recycling/Recover/Incineration
Inert/mixed/hazardous waste streams



Kier day

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Cycle Assessment Procedure for Eco-Materials



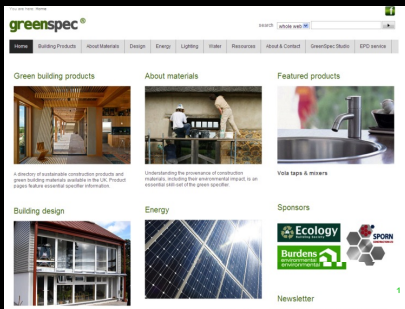
www.capem.eu

- Subject: management of waste
- Audience mindset:
 - costs of waste,
 - impact on profits,
 - profit improvement,
 - keys to better performance.
- Common desire to improve margin in these challenging times
- WasteCost® lite

Brian Murphy

BSc Dip Arch (Hons+Dist)

- Architect by Training
- Specification Writer by Choice
- Greening up my act since 1999
- Environmental Specification Consultant
- E BrianSpecMan@aol.com
- Founder of www.greenspec.co.uk
- GreenSpecStudio Design and Specification tool
<http://www.greenspec.co.uk/greenspec/studio/>
- Soon: www.greenspecdownload.co.uk



Brian Murphy



- **Scribd:**
www.scribd.com/brianspecman
 - (192,000 reads of 300 CPD seminar files, Specifications, Appendix, Calculators, etc.)
- **Twitter:**
<http://twitter.com/brianspecman>
 - Following: 2000, Followers: 1684
 - Tweets: 1400, Listed: 52
- **LinkedIn, Facebook, Plaxo, etc.**



Brian Murphy



Brian Murphy and 10 others like this.

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**Jargon Buster Rev 40 (29 08 2012)
Green/Sustainable/Environ men...**Uploaded by: **Brian Murphy** — Construction Industry Jargon Buster with a flavour of Green, Environmental, Sustainability Rev A40 29 08 2012 Major update

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**Brian Murphy** readcast this

362 p.

**Jargon Buster Rev 40 (29 08 2012)
Green/Sustainable/Environ men...**Uploaded by: **Brian Murphy** — Construction Industry Jargon Buster with a flavour of Green, Environmental, Sustainability Rev A40 29 08 2012 Major update

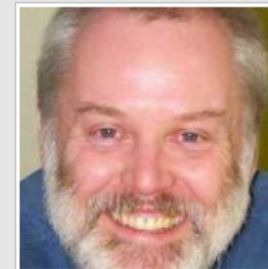
Reads: 10,860 Uploaded: 07/24/2010

**Brian Murphy** published a new revision: #26

362 p.

**Jargon Buster Rev 40 (29 08 2012)
Green/Sustainable/Environ men...**Uploaded by: **Brian Murphy** — Construction Industry Jargon Buster with a flavour of Green, Environmental, Sustainability Rev A40 29 08 2012 Major update

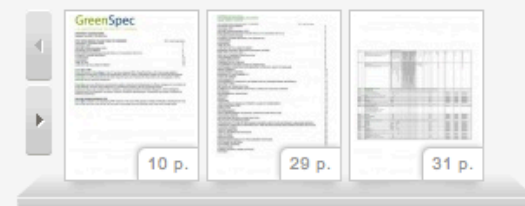
Reads: 10,860 Uploaded: 07/24/2010

**Brian Murphy** [More Info](#)

Website

www.greenspec.co.uk

Greenie (13 years active), Oldie (38+ years in Construction Industry), techie (bias towards technical stuff), spekkie (28+ years spec writing), (£2... [More](#))

Stats » [Reading](#) [Publishing](#) [More](#)Total Reads
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Activity / Shelf / Info

waste diagrams

Shelf Documents Collections Search Results for "waste diagrams"

**Design to Reduce Waste: Diagrams (Presented to Architects, FM + PM & SWMP Wor...**

www.greenspec.co.uk 02/05/2010 © NGS 2006 Title 1 www.capem.eu 1 Design to Reduce D it R d Waste ... Easy steps to reduce your share of the 109 m tonnes of construction and demolitio ...

258 p.

+ COLLECTIONS

Reads: 1,340

Readcasts: 23

Uploaded: 05 / 02 / 2010

**Waste Hierarchy**

1 09/07/2012 07:18 © NGS 2002-2009 Waste At Design Diagrams 3 Waste Hierarchy official definition & goal Effort ... 09/07/2012 07:18 © NGS 2002-2009 Waste At Design Diagrams 5 Red ...

204 p.

+ COLLECTIONS

Reads: 70

Readcasts: 1

Uploaded: 07 / 09 / 2012

**TGR Design To Reduce Waste Handout 9/page**

TGR SBS Design to Reduce Waste Diagrams 29/12/2011 www.greenspec.co.uk www.capem.eu Design ... 29/12/2011 03:43 © NGS 2002-2011 Waste At Design Diagrams 2 www.greenspec.co.uk Chinese ...

24 p.

+ COLLECTIONS

Reads: 84

Readcasts: 0

Uploaded: 12 / 29 / 2011

**J A38 Waste Hierarchy: Long Hierarchy Short Definition: (Shown to RIBA Part 2...**

Very short version of the presentation ... 2002-2009 Waste At Design Diagrams 5 Reduce: Modular design wastes less Allows reuse readily y + Walter ... www.greenspec.co.uk 24/04/2008 © NGS 2006 ...

26 p.

+ COLLECTIONS

Reads: 713

Readcasts: 0

Uploaded: 02 / 22 / 2010

**(22) Internal Partitions (Presented to RIBA Part 1 Year 2 Students)**

Internal walls and partitions - presented to Architecture students last year ... of the 90 m tonnes of construction and demolition and excavation waste each year

Reads: 2,033

Readcasts: 13

Collections + See all

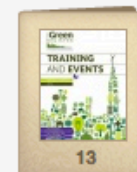
**Waste & Resource Efficiency**

Use, Waste, Reuse, Recycling, Design to reduce waste, Design for Deconstruction, etc.

Created by: BrianSpecMan

**UEL RIBA Part 1 Students**

Created by: BrianSpecMan

**TGR SBS Build Up Brian Murphy's workshops**

Created by: BrianSpecMan

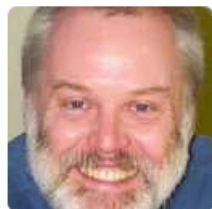
**CFA Contract Flooring Association meeting presentation**

Presentation to committee about Environmental issues related to flooring specification

Created by: BrianSpecMan

**LSBU 2012 PG RIBA Part 2 Year 1 Environmental Technology**

Created by: BrianSpecMan



Brian Murphy

@BrianSpecMan

Greenie, Techie, Spekkie, SpecAuditer, Project Environmental
Brainstorming, Design Consultant, CPD, like rattling establishment
and status quo

Peterborough, UK · <http://www.greenspec.co.uk>

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Tweets



Brian Murphy @BrianSpecMan

25s

Reading Material Exchange: UK wide Social Enterprises, (Shown at
SECBE events Reading & Brighton) on Scribd scr.bi/NK6NLz
#readcast

Expand



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1h

lnkd.in/UKc_YK Hilary Thanks for this, if I get to do another
presentation on GreenDeal I will add this in. I could update a...

Expand



Brian Murphy @BrianSpecMan

7h

Wow. Check out inspirational, taking control, joining in, R&DIY
(R&D+DIY), window gardens, global community, self-help
ted.com/talks/lang/en/...

Expand Reply Delete Favorite



Brian Murphy @BrianSpecMan

30 Aug

Reading Jargon Buster Rev 40 (29 08 2012)
Green/Sustainable/Environmental Construction Industry BR... on
Scribd scr.bi/TAeiBe #readcast

Expand



Brian Murphy @BrianSpecMan

29 Aug

I've just signed up to save the Arctic. I need you to join me too.
#SaveTheArctic savethearctic.org/?referer=503d3...

Expand

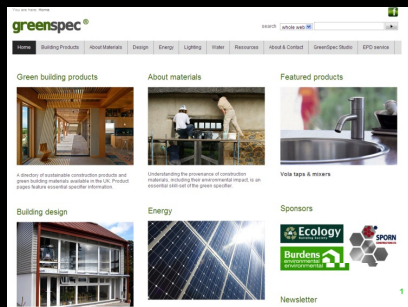


Brian Murphy @BrianSpecMan

29 Aug

Jargon buster is in Revision 40 and has been read over 10,000 times
since uploading, I will keep updating it since its found to be useful

Expand



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Publications



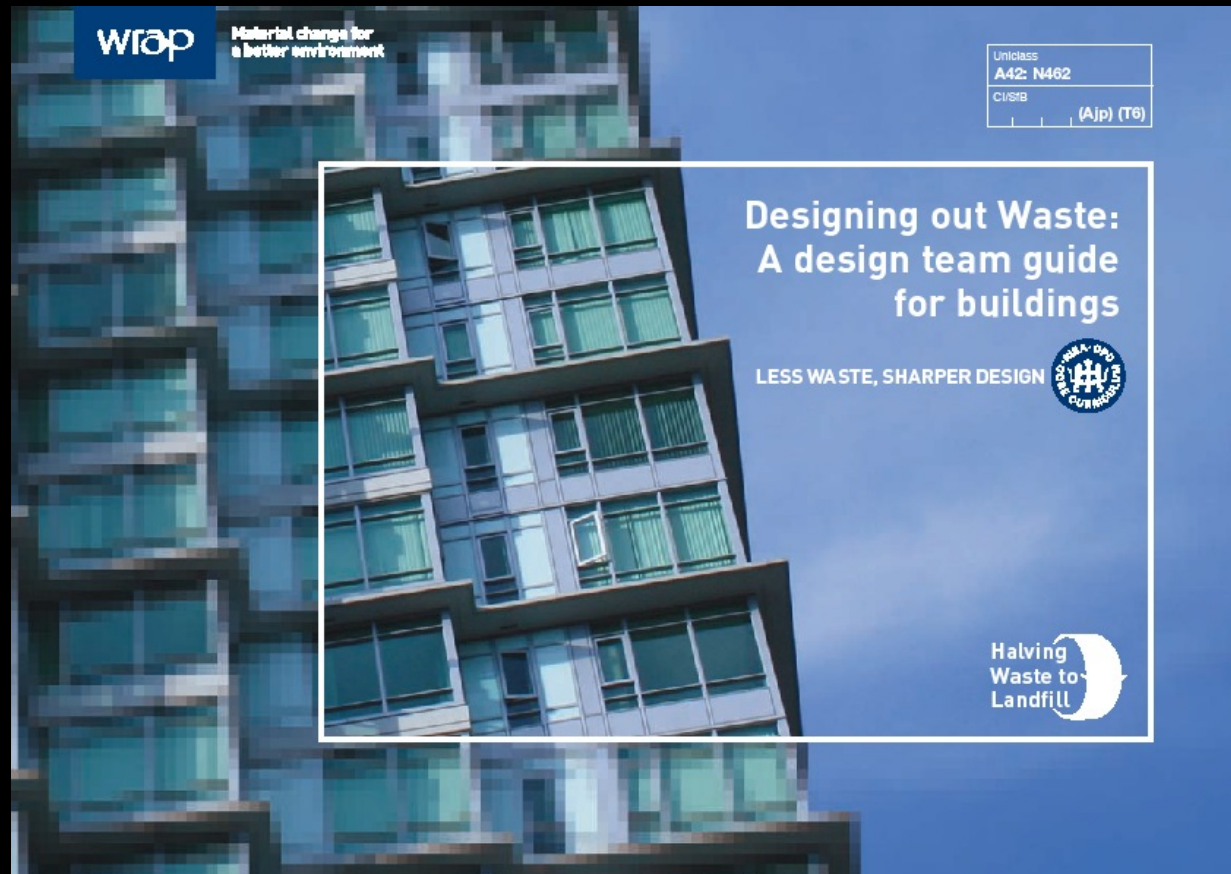
Material change for
a better environment

WAS400-002/Waste Minimisation Design Review & Exemplars

Designing out Waste: a design team guide

Information on Designing out Waste opportunities for designers.

Project code: WAS400-002
Date: March 2009

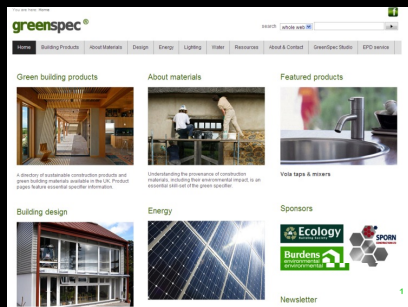


Demolition Protocol

- **EnviroCentre and Strathclyde Uni**
- **Supported by ICE Institution of Civil Engineering and London Remade**
- **Driven through T&C Planning Process**
- **Pre-demolition Audits & Bill of Pre-demolition Quantities**
- **Consider reclaim and reuse or recycling potential of materials in existing buildings in development process**
- **Ratio between potential and intended reuse considered by T&CP Officer**

Demolition Protocol Documents

- 2003
- <http://www.ice.org.uk/Information-resources/Document-Library/A-report-on-the-Demolition-Protocol,-2003>
- 2008
- <http://www.ice.org.uk/getattachment/eb09d18a-cb12-4a27-a54a-651ec31705f1/Demolition-Protocol-2008.aspx>



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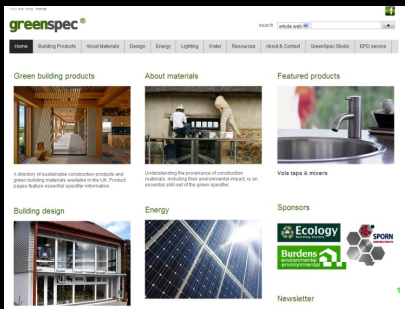


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Tools & Calculators

bre (formerly building research establishment)

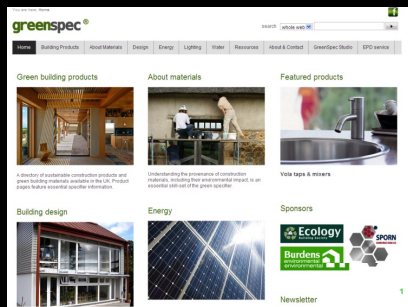
- BREEAM, CfSH, EcoHomes
- smartWASTE
 - waste statistics,
 - hand held computers
- BREMAP Resource Efficiency Businesses Map website
- CRWP Knowledge of wastage %
- More sophisticated but slow version of WasteCost*Lite*®
- SWMP checklist tool
- Meeting rooms



WRAP Tools



- **Net Waste Tool**
 - <http://nwtool.wrap.org.uk/ToolHome.aspx>
- **Waste To Landfill Reporting Portal**
 - <http://reportingportal.wrap.org.uk>
- **Design Of Waste Tool For Buildings**
 - <http://dowtb.wrap.org.uk>
- **Design Out Waste Tool For Civil Engineering**
 - <http://dowtce.wrap.org.uk>
- **SWMP Tracker**
 - <http://swmptracker.wrap.org.uk>



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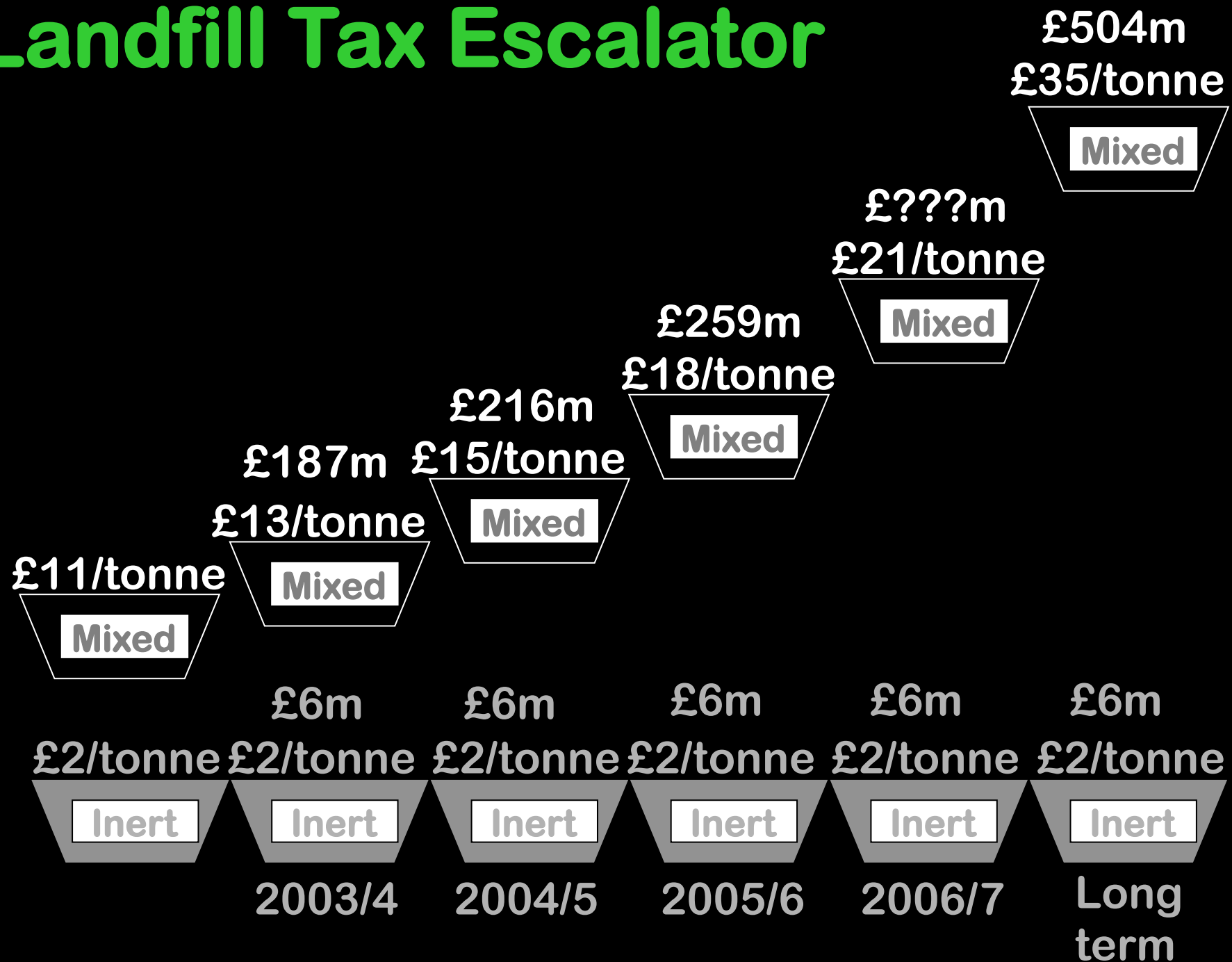
Cycle Assessment Procedure for Eco-Materials



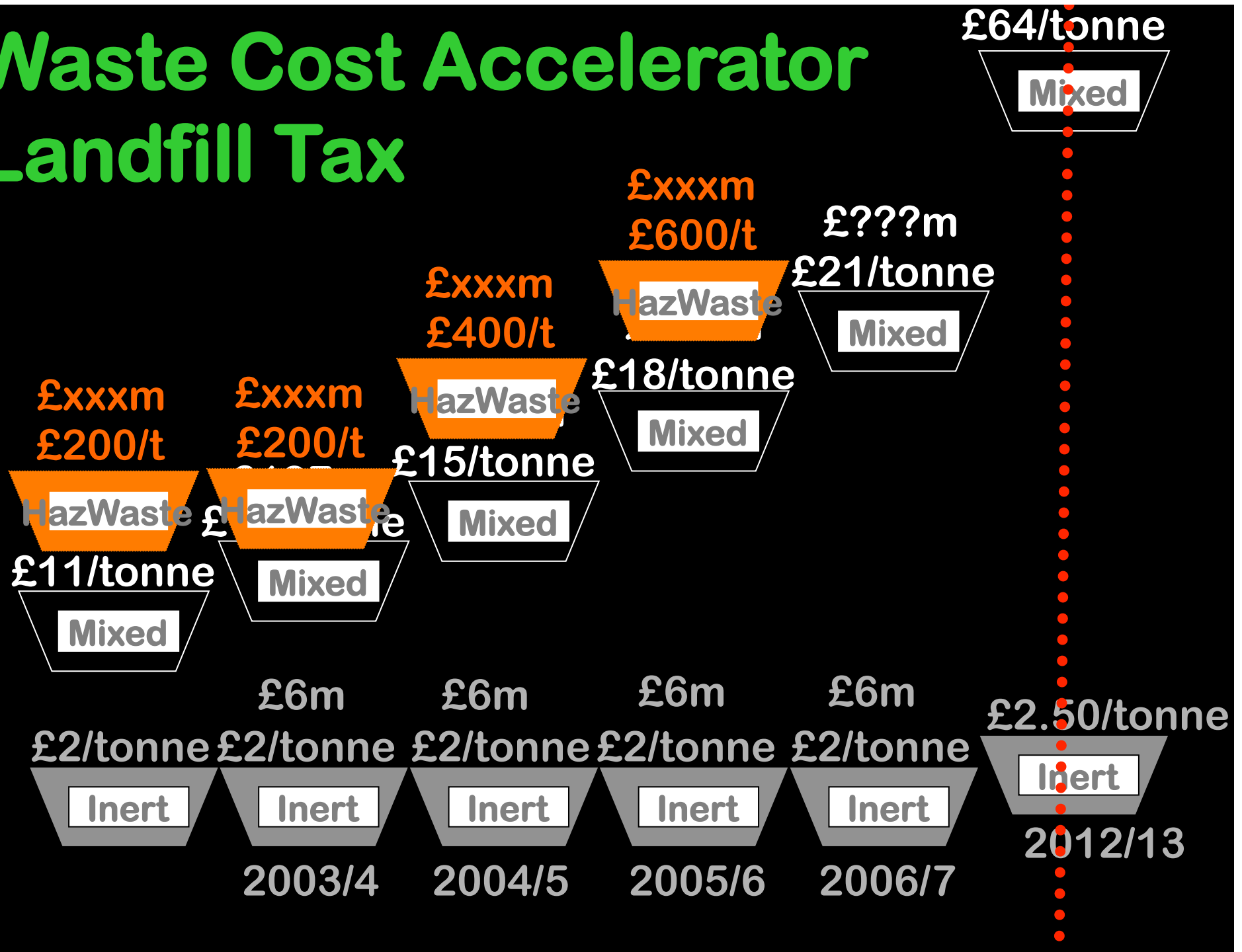
www.capem.eu

Fiscal Incentives

Landfill Tax Escalator



Waste Cost Accelerator Landfill Tax



GreenSpec WasteCost*lite*®

- **1 minute to input**
 - Number of buildings, floor area, number of floors, type of construction,
 - Choose which waste to be segregated
- **Instantaneous output:**
 - Cost of waste from building
 - Cost to segregate waste
 - Money saved by segregating

INPUTS

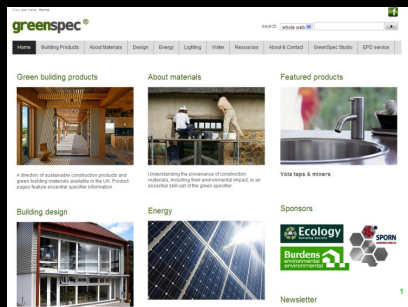
OUTPUTS

| | | | |
|----------|---------------------|---|-----|
| 1 | Number of buildings | 0 | No. |
| | Building Footprint | 0 | m2 |
| | Number of floors | 0 | No. |

| | | | |
|----------|--|-----|---------------------------------------|
| 2 | Choose a construction type closest to your project | | |
| | Average (All building types) | Yes | Type Yes in only one cell |
| | Average (Offices) | No | |
| | Average (Residential) | No | Make sure No appears in the remainder |
| | Innovative MMC Prefab Housing | No | |
| | Steel and Glass Office | No | |

| | |
|---|------------|
| Cost of one skip system of mixed waste removal | £0.00 |
| "Waste segregation will cost more money" | £0.00 |
| Revised cost of reduced one skip mixed waste system | £0.00 |
| "But look how much it can save!" | £0.00 |
| Predictable Volume of waste generated on Project | 0 m3 |
| Volume potentially diverted from landfill | 0 m3 |
| Volume diverted with chosen waste streams | 0 m3 |
| Predictable weight of waste generated on project | 0.00 tonne |
| Weight of waste potentially diverted from landfill | 0.00 tonne |
| Weight diverted with chosen waste streams | 0.00 tonne |
| Potential % diverted from landfill (by tonnage) | 100% |

| 3 | | 4 | | 5 | | 6 | |
|---|--|--|--------------------------------------|--|-------|---------------------------------------|---------------|
| Potential Waste Segregation/Reclaim & Reuse/Recycling Streams | Add Yes or No in each cell to indicate which | Add or replace rates with local collection rates £/tonne | | Number of 8 CuYd skips for each waste stream | | Potentially Reusable or recyclable m3 | |
| WAS+ICE Colour system | | | | | | | |
| No Segregation (Mixed incl. Hazardous) | Yes | | | | | | |
| Inert | No | £15.00 | £/tonne | 0 | No. | 0 | m3 |
| Mixed metal | No | -£25.00 | £/tonne | 0 | No. | 0 | m3 |
| Mixed (non Hazardous) | No | £75.00 | £/tonne | 0 | No. | 0 | m3 |
| Timber | No | £25.00 | £/tonne | 0 | No. | 0 | m3 |
| Packaging | No | £15.00 | £/tonne | 0 | No. | 0 | m3 |
| Compactable | No | £15.00 | £/tonne | 0 | No. | 0 | m3 |
| Plasterboard | No | £25.00 | £/tonne | 0 | No. | 0 | m3 |
| Hazardous | No | £800.00 | £/tonne | 0 | No. | 0.0000 | m3 |
| | 1 | | | 0 | Total | 0 | Total |
| Total number of waste streams proposed for | | Local waste collection rates £/8m3 skip | Local waste collection rates £/tonne | Total number of 8 Cu Yd skips | | Potentially Reusable or recyclable m3 | Mou over read |



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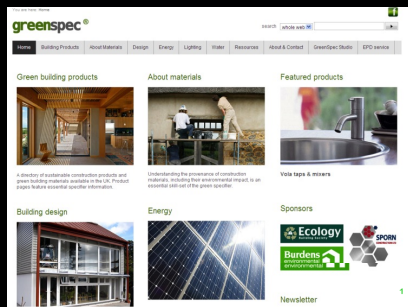


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Demonstration

[file://localhost/Users/
BrianSpecMan/Documents/
ASWSDOCS/GREEN/](file://localhost/Users/BrianSpecMan/Documents/ASWSDOCS/GREEN/)





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Waste Hierarchy 2011

EU and EA definitions &
implications



Costs

Effort

Old Waste Hierarchy

old official definition & goal

Less

Reduce

More

Reuse

Recycle

More

Recover

Less

Costs

Effort

Old Waste Hierarchy

The reality

Less

Reduce

Less

Reuse & Recycle

Recover

Reject

More

More



Old Waste Hierarchy

GreenSpec definition

Rethink, Re-educate, Resolve, Refocus,
Resource, Relate, Research, Refer,
Refresh, Rename, Regard, Revalue,
Remeasure, Reprogramme, Replan,
Reconsider, Refuse, Reject, Return,
Redesign, Regularise, Rehearse,
Rationalise, Remediate, Reduce,
Reserve, ReSpec, Register, Reuse,
Reclaim, Repair, Retain, Remind,
Recycle, Recover, Record, Report,
Reward, Review, Revise, Refine, Restart

Costs

Effort

2011 Waste Hierarchy

Less

Prevention

Less

Preparing for re-use

Recycling

Other recovery

Disposal

More

More

| Paper and Card | Food | Garden Waste | Textiles | Wood | Glass | Metals | Plastics± | WEEE | Tyres | Residual 'black bag' |
|---|--|--|------------------------|---|-------------------------------|---------------------------------|------------------------|--|--|---|
| Prevention | Prevention | Prevention | Prevention | Prevention | Prevention | Prevention | Prevention | Prevention | Prevention | Prevention |
| Preparation for re-use | | | Preparation for re-use | Preparation for re-use | Preparation for re-use | Preparation for re-use | Preparation for re-use | Preparation for re-use | Re-treading | |
| Recycling | Anaerobic Digestion | Anaerobic Digestion (dry) ² | Recycling | Recycling; energy recovery♦ (preferable to recycling for lower grade materials) | Recycling in a remelt process | Recycling | Closed loop recycling | Recycling (esp. suitable for metals and high quality plastic) | Recovery: use in road surfaces | Solid recovered fuel derived from MHT or MBT, where it replaces coal* |
| Energy recovery♦ (esp. suitable for short fibres or contaminated materials) | Composting; other energy recovery technologies | Composting; other energy recovery technologies | | | Other recycling | | Other recycling | Energy recovery♦ (esp. suitable for non-hazardous mixed plastic) | Energy recovery in cement kilns | Energy Recovery, all technologies (Heat Only) |
| | | | Energy recovery♦ | | Energy recovery♦ | Recycling after energy recovery | Energy recovery♦ | | Energy recovery through pyrolysis | Energy Recovery, all technologies (CHP) |
| | | | | | | | | | Other recovery (eg drainage fill & sea defences) | Energy Recovery, all technologies (Electricity Only) |
| | | | | | | | | | Gasification/incineration with EfW | MBT or MHT outputs used as fuel (but do not replace coal) or * |
| Disposal | Disposal | Disposal | Disposal | Disposal | Disposal | Disposal | Disposal | Disposal | Microwave treatment | Disposal |

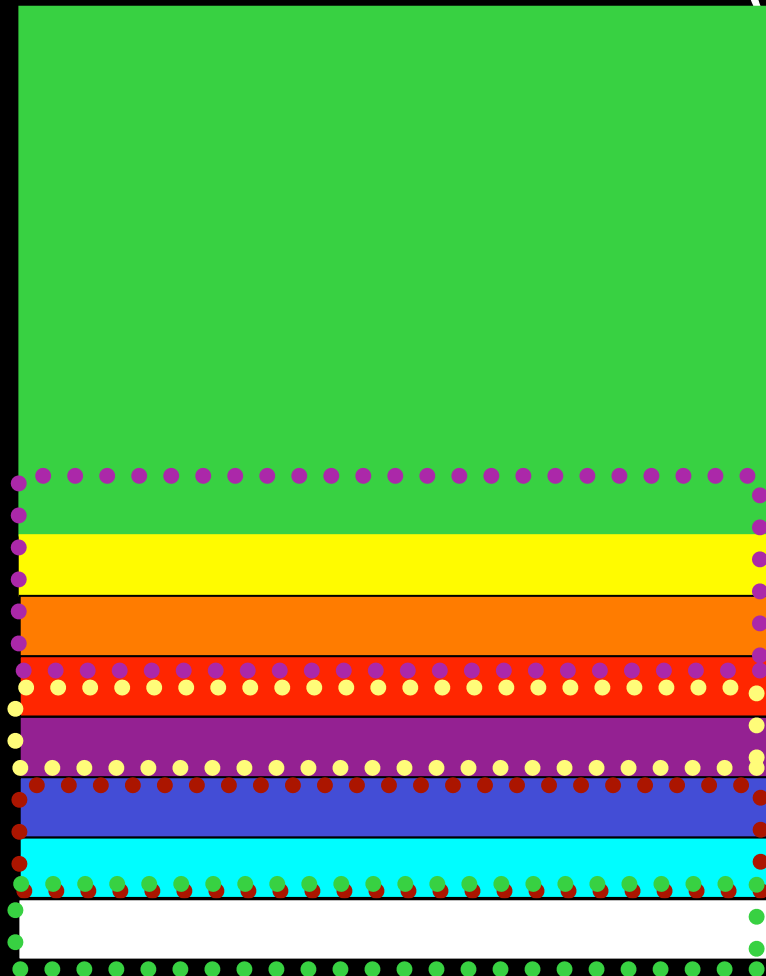


Relearn some waste statistics

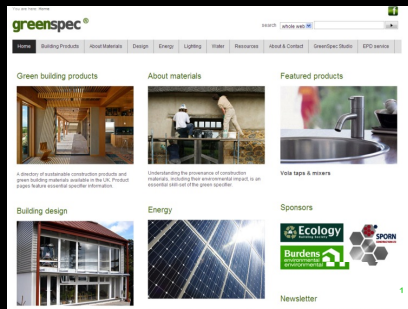
- 400m tonnes/year materials to UK CI
- 109m tonnes/year wasted by UK CI
- 30m tonnes is materials off-cuts
- 24m tonnes/year (24%) is packaging
- 23.7m tonnes/year soil & rock
- 10m is temporary materials
- 10m tonnes/year over ordered never needed £1.5bn/annum (EA 2007)

Over ordered never needed Lost, stolen and reordered

(not to scale)



- Required for the design
- **QS inaccurate take off +/-10%**
Requires remeasure by contractor
- **SMM7 Wastage factor 5-20%**
33% is off-cuts some is damage
- **Over-order safety margins x%**
- **Minimum order quantities +++**
- **Call-off extra % JIC Just in case**
- **Merchant delivers % more than required**
 - in the hope nobody is checking,
 - invoices accordingly
- **Lost on site**
-**Stolen from site for PJs 20%**
- **Reordered to replace lost or stolen**
-**Damage & Poor quality work 3%**
-**Spares for on going maintenance**



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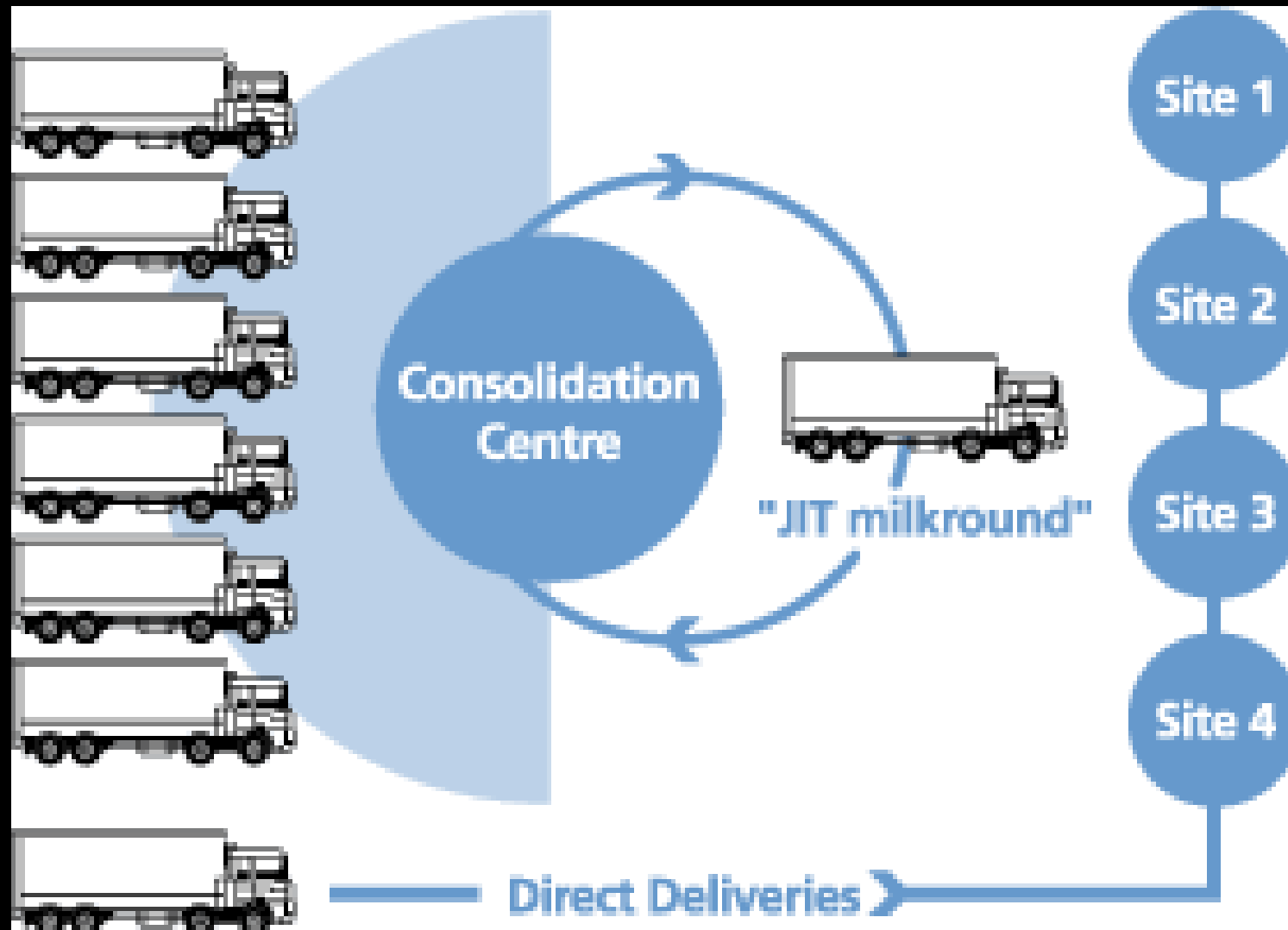
www.capem.eu

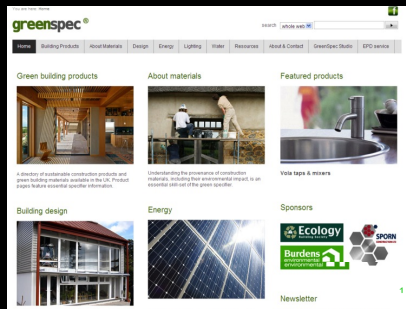
Resource Efficient Distribution Centers

Receiving recovered resources from projects
Sorting materials for site's daily requirements
Feeding Site(s) with resources, collecting waste



Consolidation Centre





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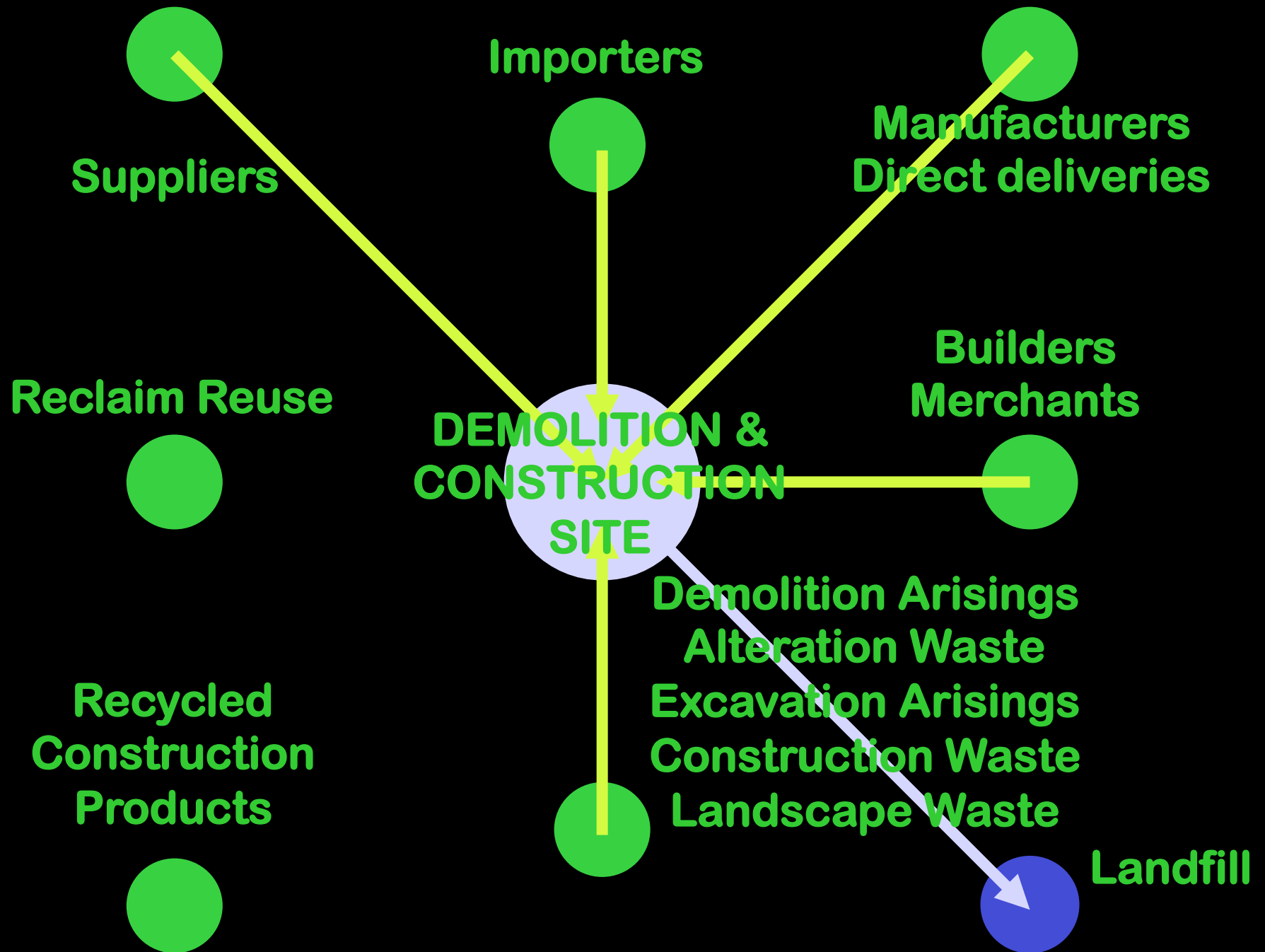


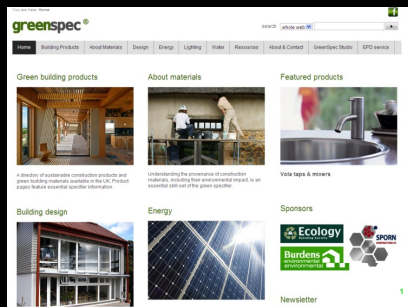
www.capem.eu

Recent/Current Poor Practice

Recent Past Practices

- Demolition arisings to landfill
- No resource recovery
- Poor resource management
- Spoiled materials to landfill
- Construction waste to landfill
- No waste reduction, segregation, reuse,
- Materials delivered with multiple vehicles, big and small deliveries





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Normal Poor Practice



Conventional approach: Demolition waste

- **Program demands fast demolition**
- **No time for soft-strip, deconstruction, resource recovery, architectural salvage**
- **Many big trucks take mixed waste**
- **All mixed waste to mixed landfill**

Reclaimers

Architectural Salvage

Tack-back

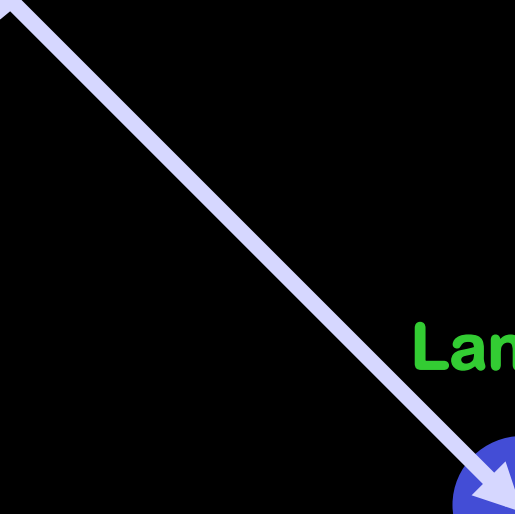
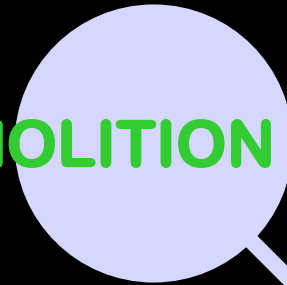
**Construction
Reclaim**

DEMOLITION SITE

Recyclers

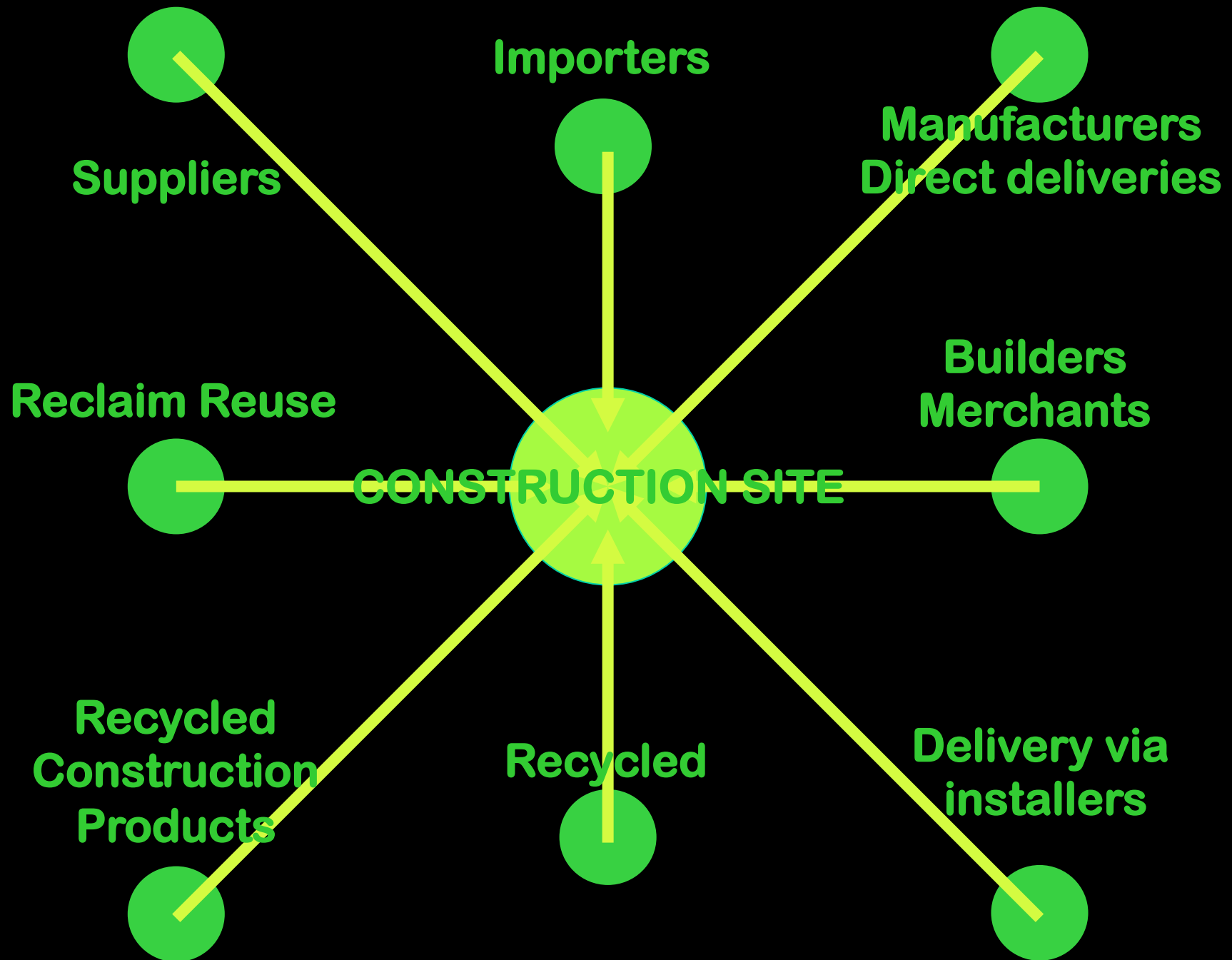
**Soft strip
Reclaimers**

Landfill



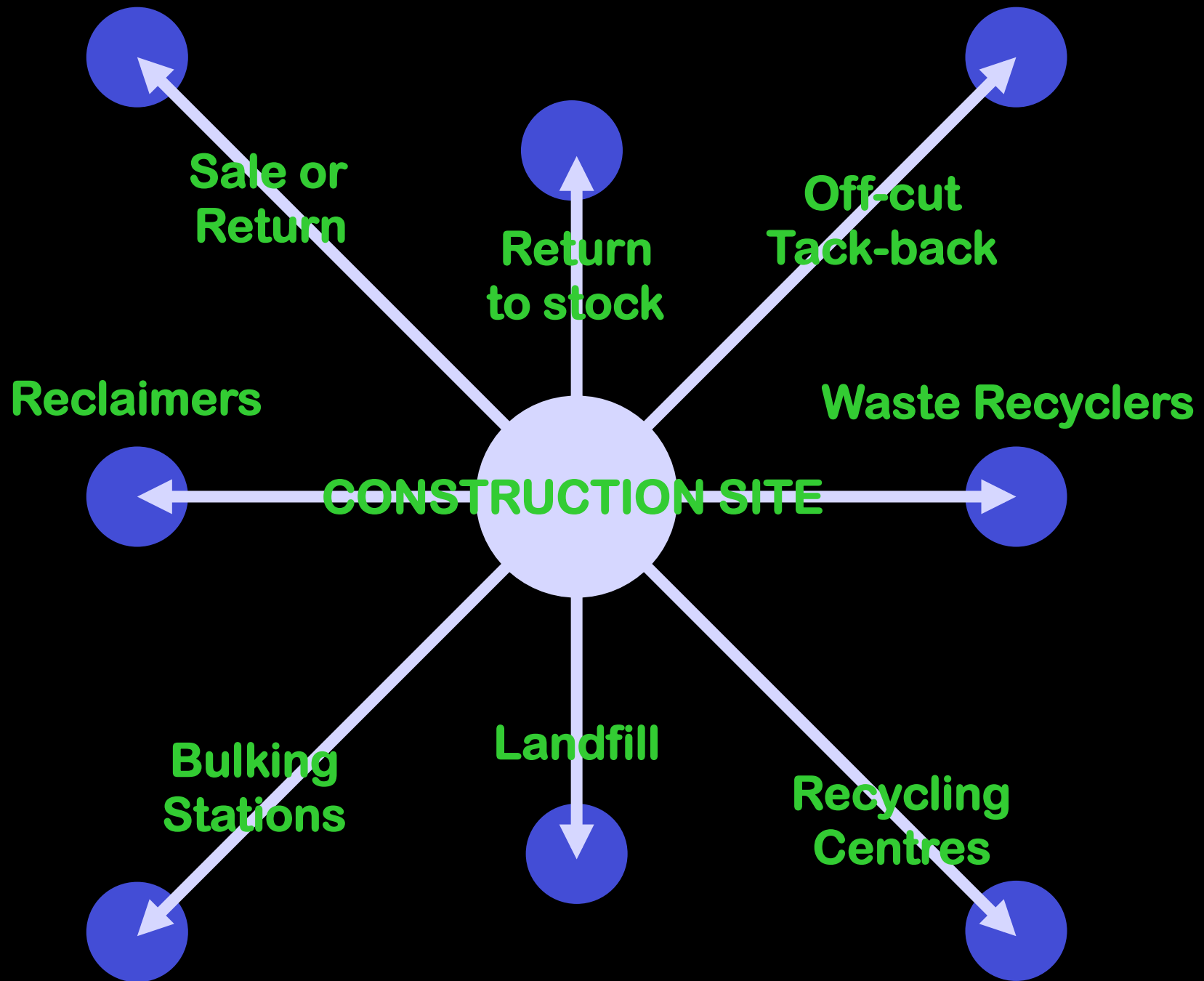
Conventional approach: New materials for Construction

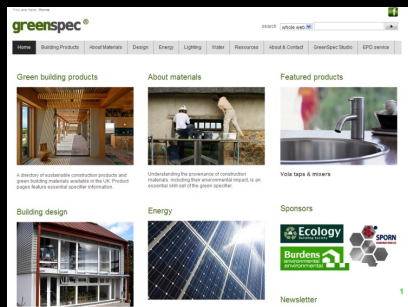
- **Many deliveries from far and short distances**
- **Program demand drives deliveries**
- **Add to roads congestion**
- **Arrive at site occupy space whilst unloaded site congestion**
- **Whole delivery early JIC stored on site**



Conventional approach: Construction Waste

- **On-site waste segregation and storage**
- **Occupy space and takes time away from skilled tradesmen**
- **Many skips add to road congestion**
- **Skip lugger occupies space whilst exchanging skips adds to site congestion**
- **Skip collection JIT (full)**
- **Many deliveries to far and short distances**





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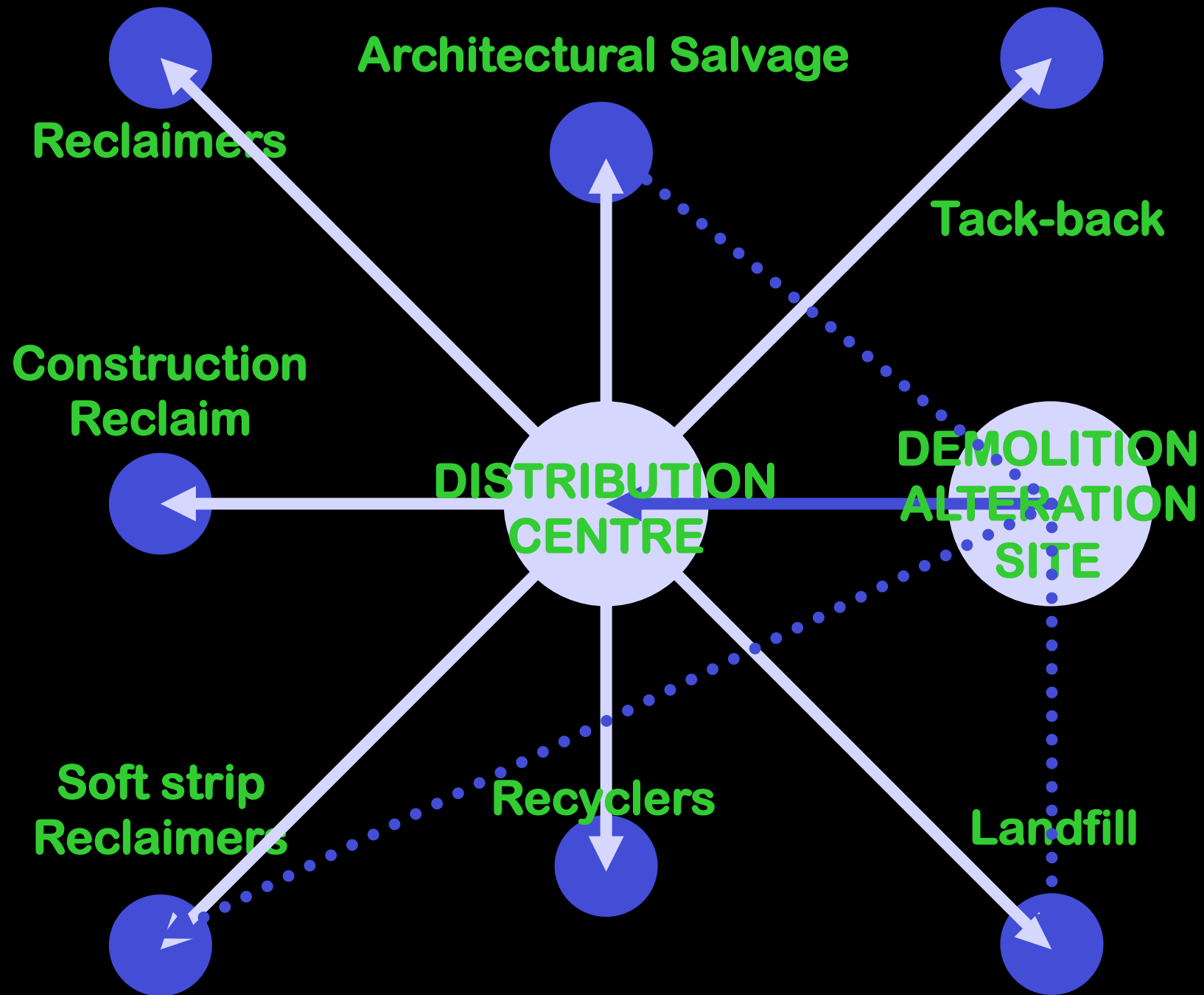
New Approach Better Practice

Receiving recovered resources from projects
Sorting materials for site's daily requirements
Feeding Site(s) with resources, collecting waste



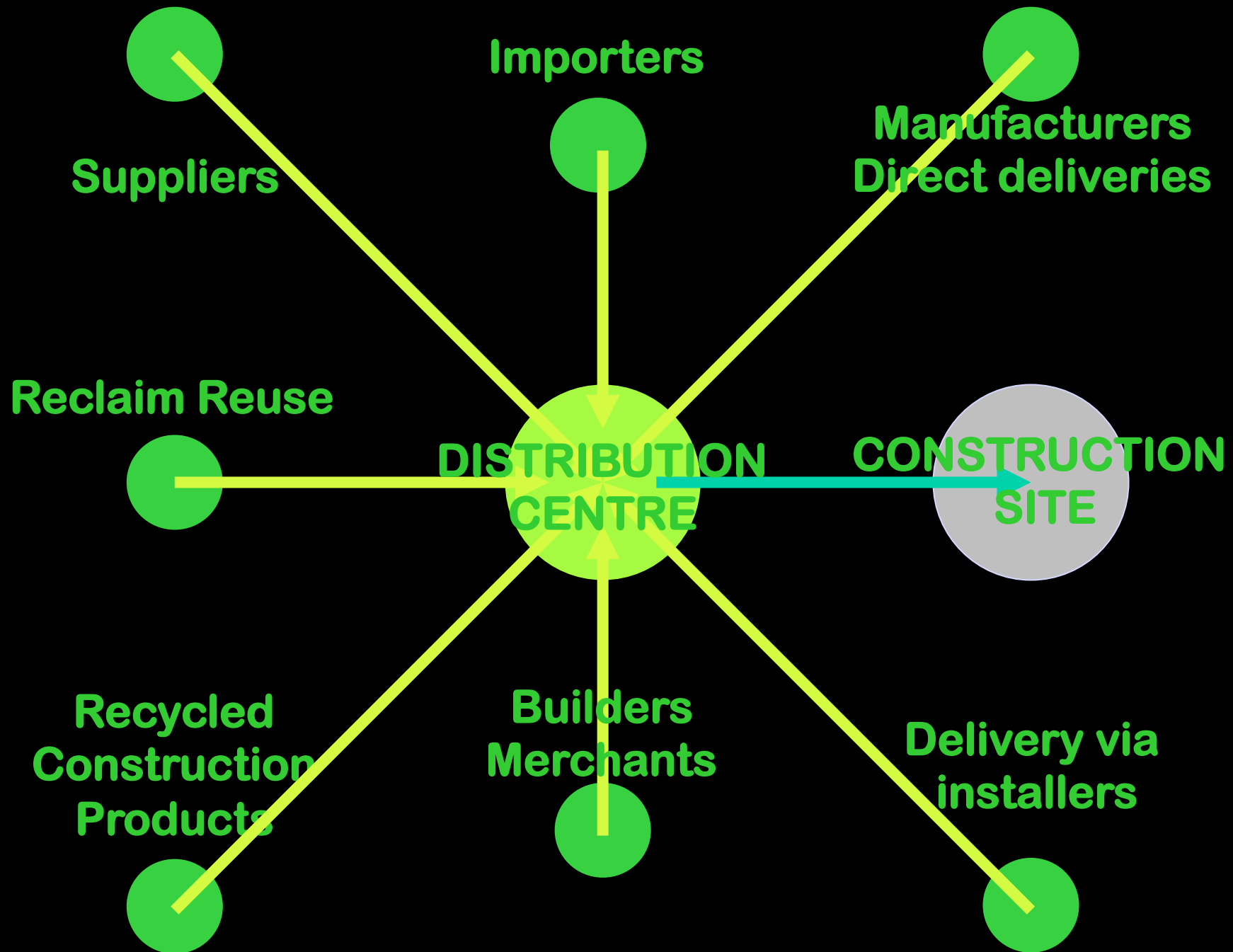
Alternative approach: Demolition

- **3 stage soft strip:**
 - Deleterious, Hazardous, sharps, vermin
 - Furniture & finishes;
 - Recovery of Reclaimable, pallet up on site as dismantled
- **On-site segregation to avoid spoiling if space available, Off-site if not**
- **Deconstruction using multiple chutes to separate segregation skips**
- **Less number of larger capacity REL skips, less deliveries over short distances**
- **Large scale off-site waste segregation, bulking, distribution & storage**
- **Use waste segregation skilled workers with interest in waste reduction with own KPIs**



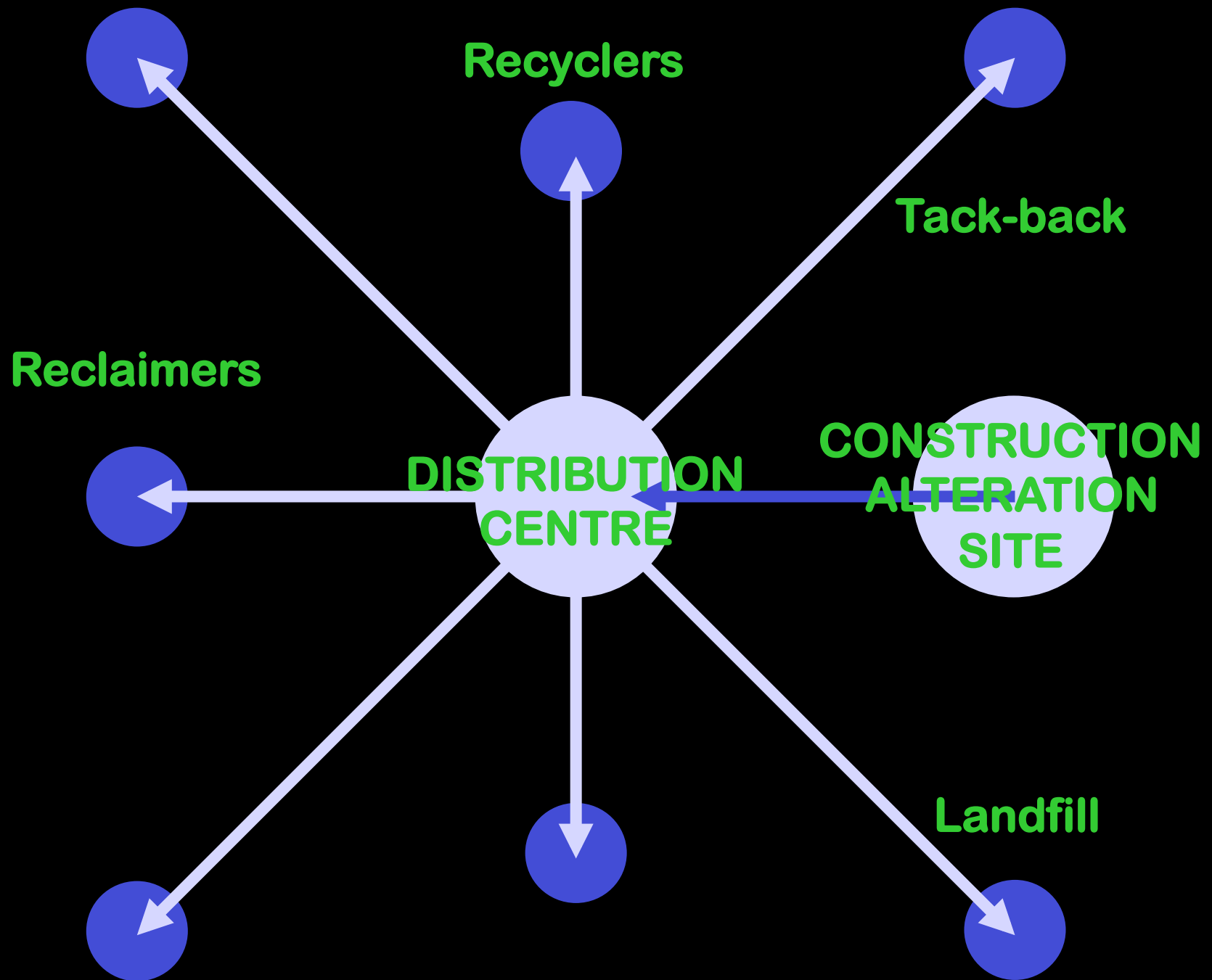
Alternative approach: Construction

- Off-site distribution centre receiving all deliveries
- Appropriate weather-tight, condition-controlled, clean storage
- Good inventory control, less theft
- Use goods in order of delivery within shelf life
- Minimal JIC site storage, subject to deterioration
- Daily JIT 'Just in Time' deliveries for each day's work
- Small capacity deliveries over short distances to site
- 'Surplus to requirements' held in stock
- Adopts 'Lean Thinking' and applies it with minimal environmental impact



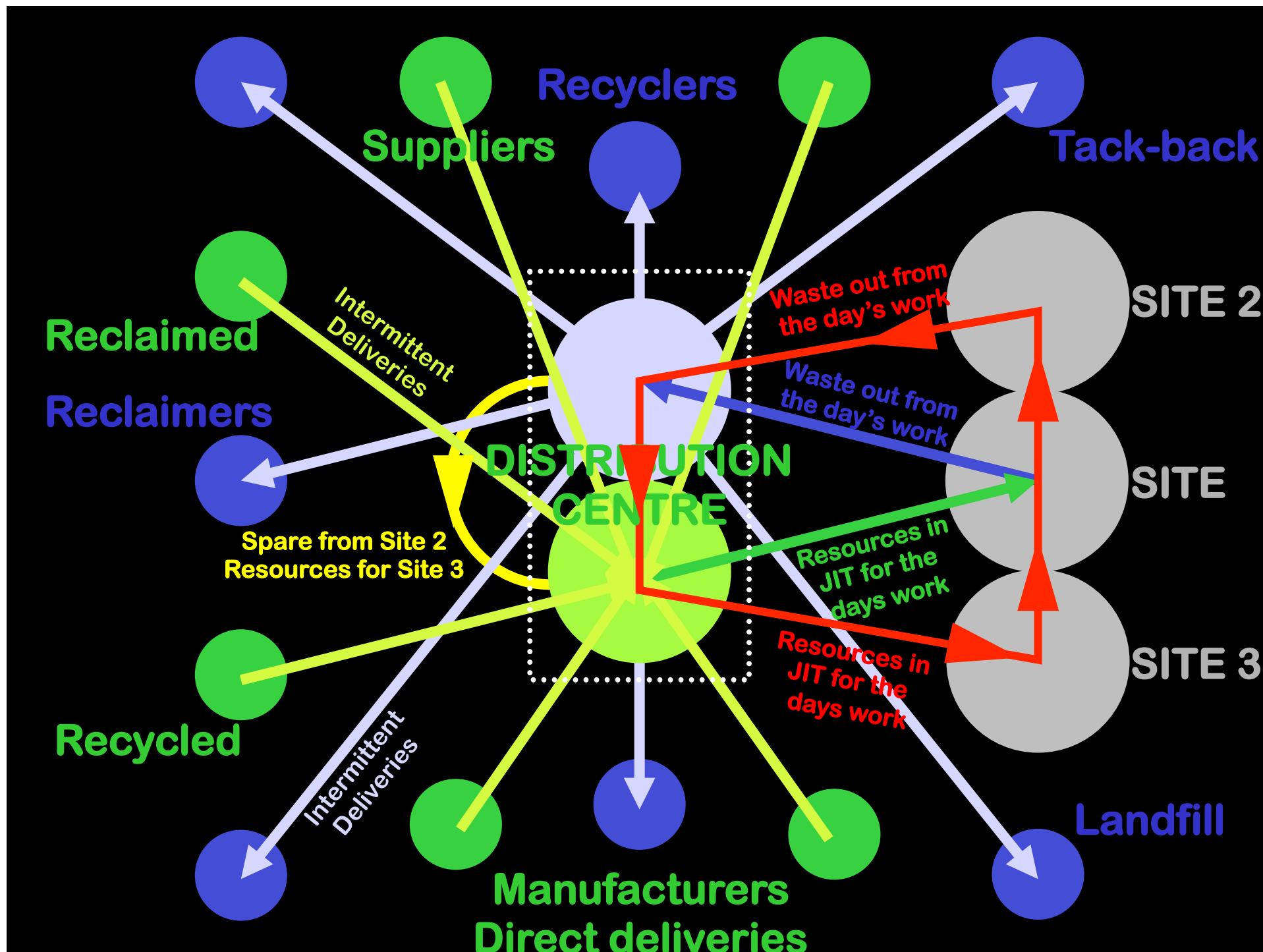
Alternative approach

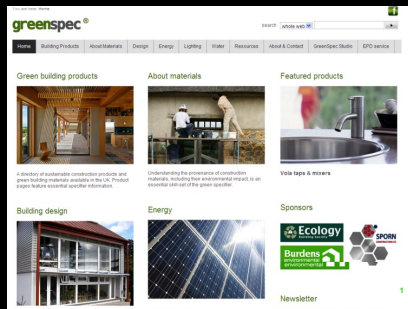
- On-site limited segregation: Hazardous, liquid
- Reduced site occupancy
- Less large capacity REL skips
- Less deliveries over short distances
- Off-site waste segregation and storage
- At landfill site for example
- Use waste segregation skilled workers with interest in waste reduction with own KPIs



Combine alternative approaches

- One temporary or permanent site and/or warehouse building
- Combine resource storage, sorting for delivery and waste segregation/bulking
- Daily round trips to site(s) with JIT goods
- And daily waste and packaging collection on same trip
- Facilitates 'take-back' 'return-to-stock' 'use or return'
- 'Surplus to requirements' held for next site
- minimising 'over ordered never needed'





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New Approach Best Practice

Receiving recovered resources from projects
Sorting materials for site's daily requirements
Feeding Site(s) with resources, collecting waste

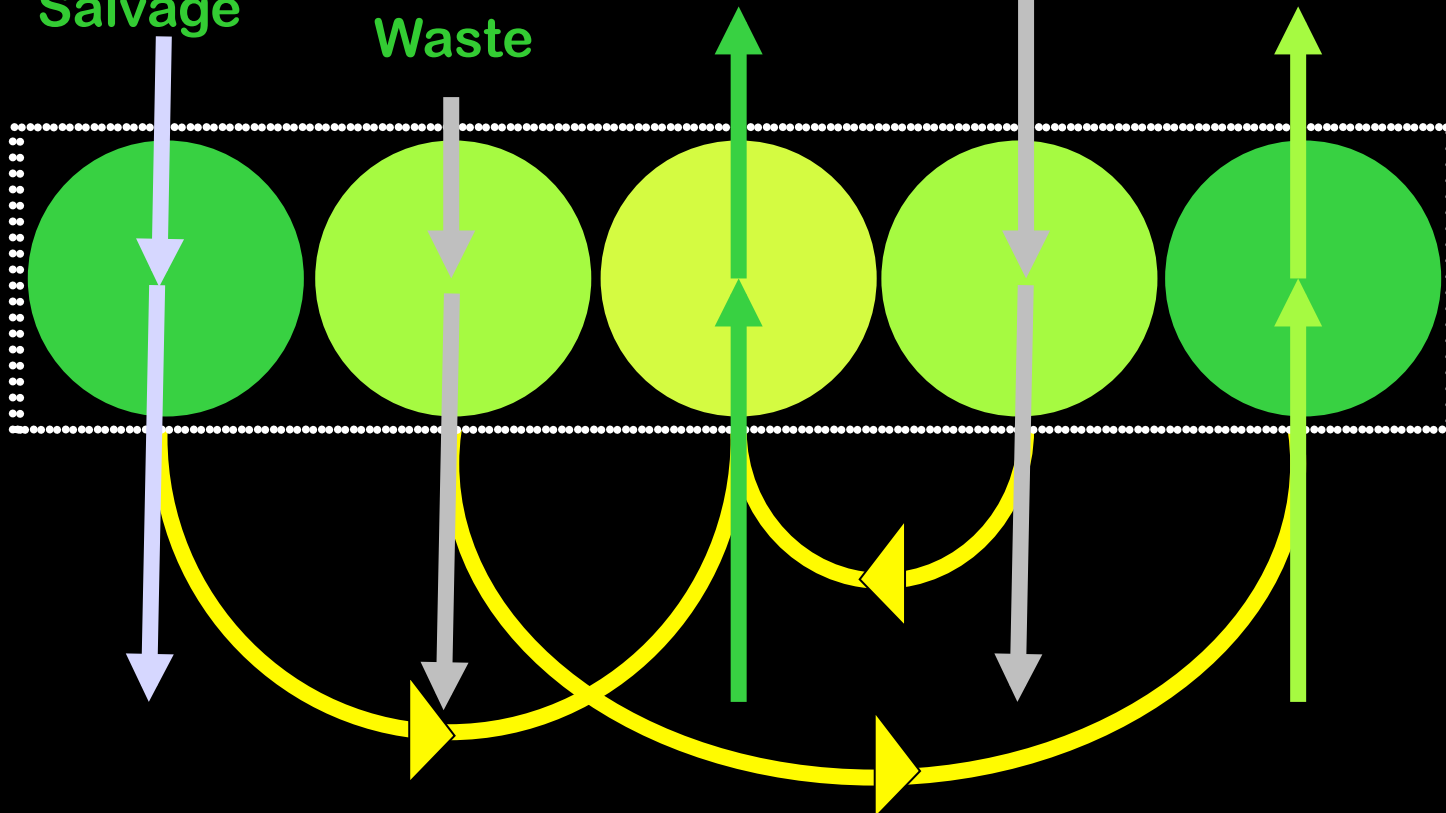


Excavation and Landscape

- Site clearance: turf & topsoil stockpile
- Green waste trimmings: Composting
- Excavates subsoil: stockpiles
- Hard landscape, sub-bases, drain/
service bedding/backfill: stockpile
- Subsoil & compost: Topsoil
manufacture

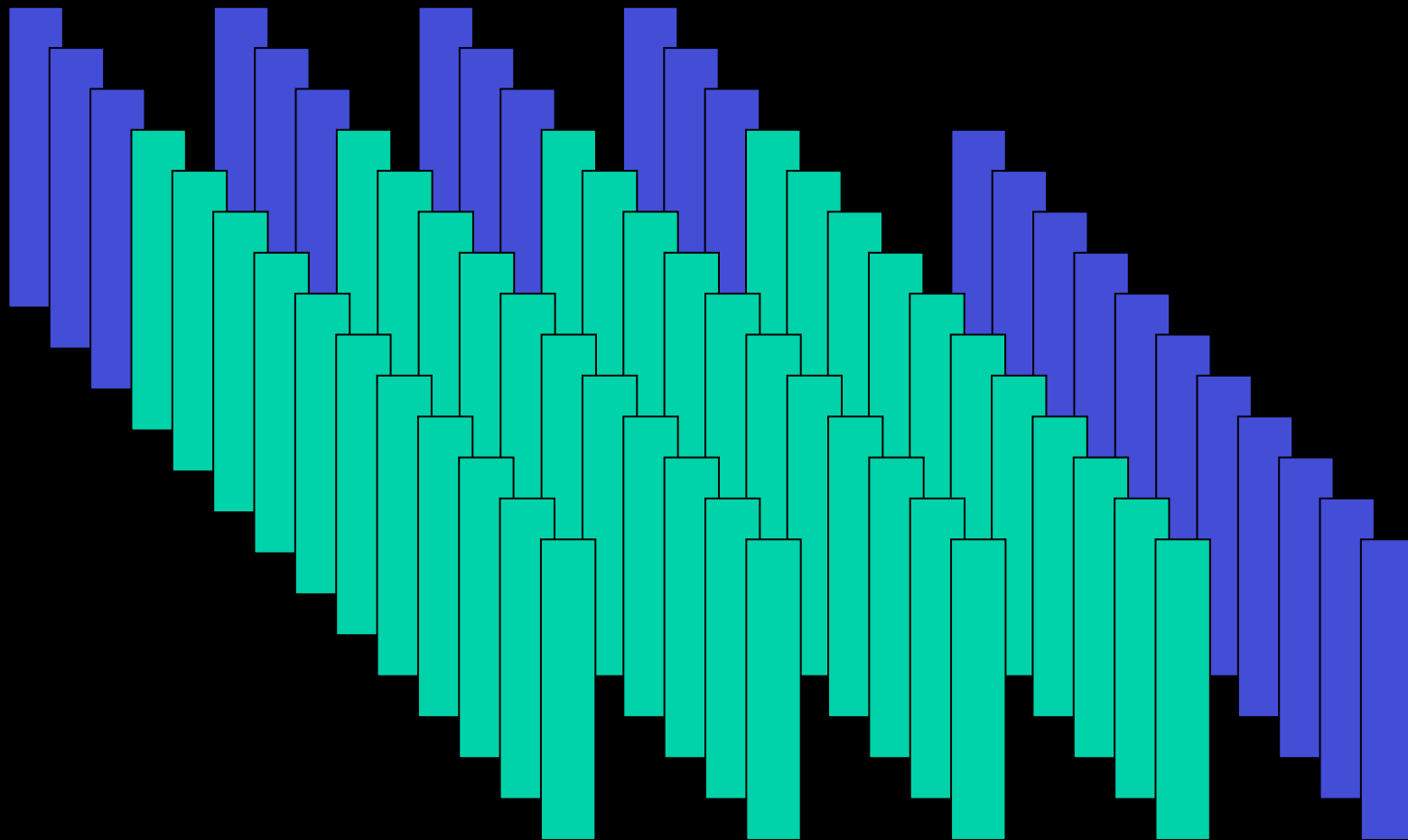
CONSTRUCTION / ALTERATION SITE

Soft strip Demolition Alteration Arisings Architectural Salvage
Site Clearance Excavation Arisings Landscape Green Waste
New Construction Materials Inbound
New Construction waste outbound
New Landscape Materials Inbound



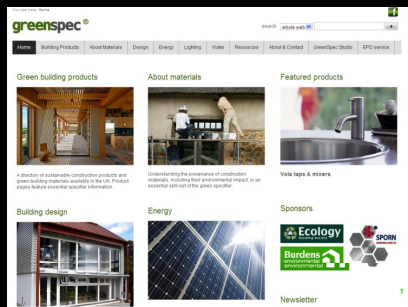
MANUFACTURERS/SUPPLIERS RECYCLERS/RECLAIMERS

5-15% over order = 13m tonnes/yr



Temporary Sites

- **Developers land stocks**
- **Ex agricultural land laying dormant**
- **Temporary Planning Permission**
- **Short life distribution centres x years**
- **Whilst local projects persist**
- **Then move operation to new location**



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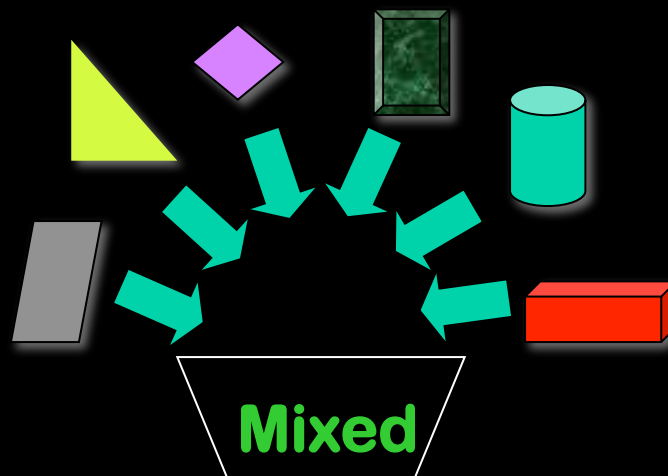
On-site Waste Min/Man Practices

Site Waste Management

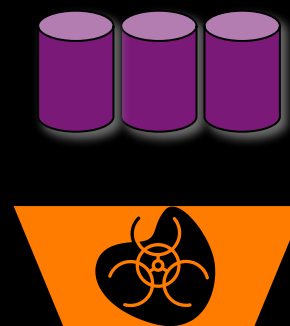
© NGS 2004-05 Brian Murphy



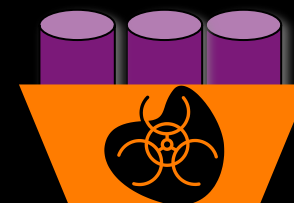
**Mixed
Construction
Waste**



**Hazardous
Waste**



**Waste
Handling**



**Landfill sites
Classification:
Normal on &
off-site Practice**

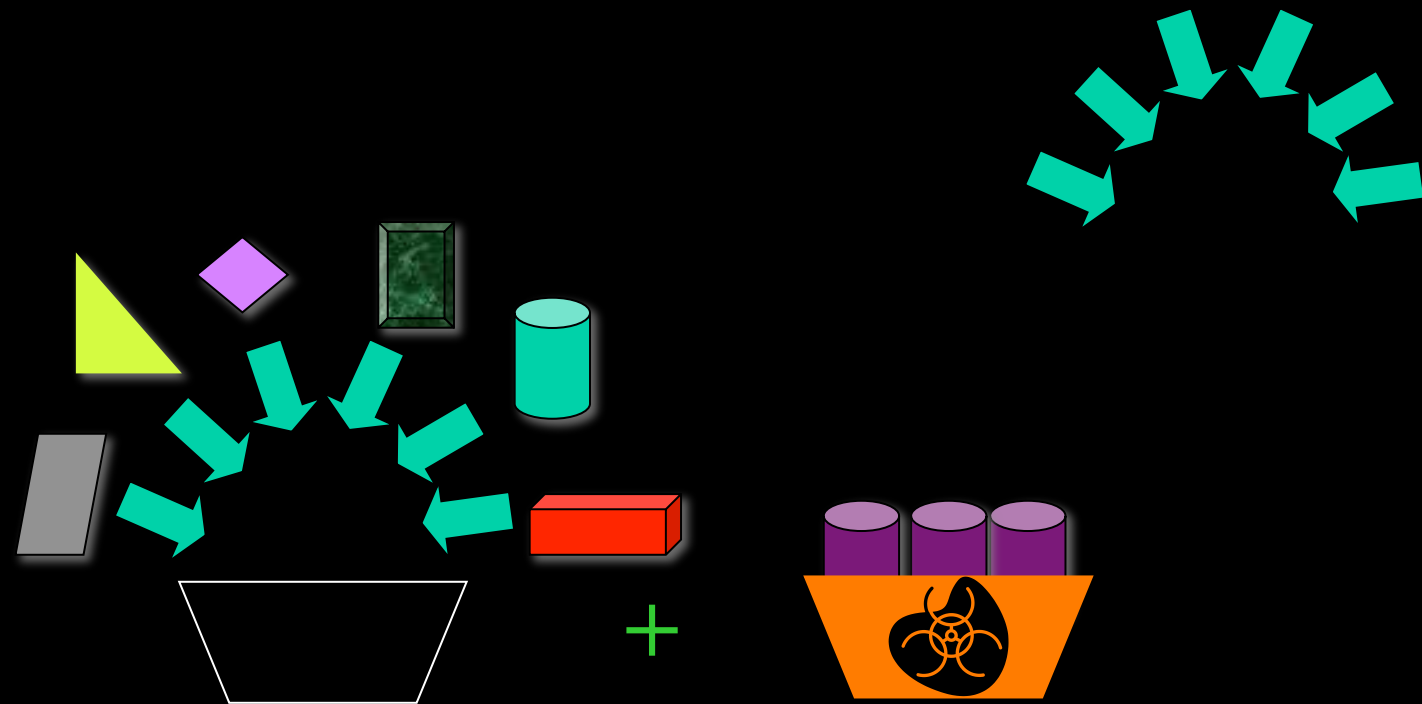
Non-Haz

Hazardous

Since 2004/5

Waste Stream Colour Coding

- National Colour Coding scheme for source segregation of recyclate on C&D sites
- Developed by ICE
- Colour coding important for:
 - Raising waste awareness
 - Separating waste at source
 - Reducing waste to landfill
 - Providing cost savings to construction companies
- www.wascot.org.uk/construction/index.asp

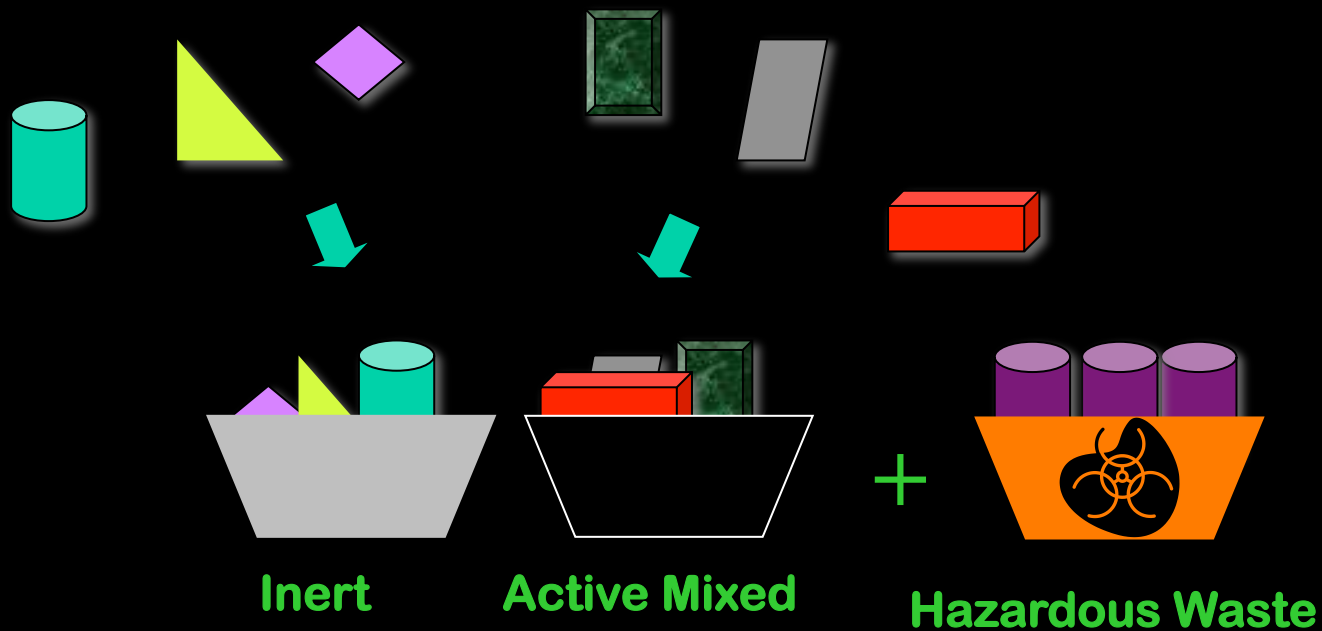


Inert & Active Mixed
1 Skip System Normal

Hazardous Waste

Since 2004
1 becomes 2
To be enforced
Since 2005

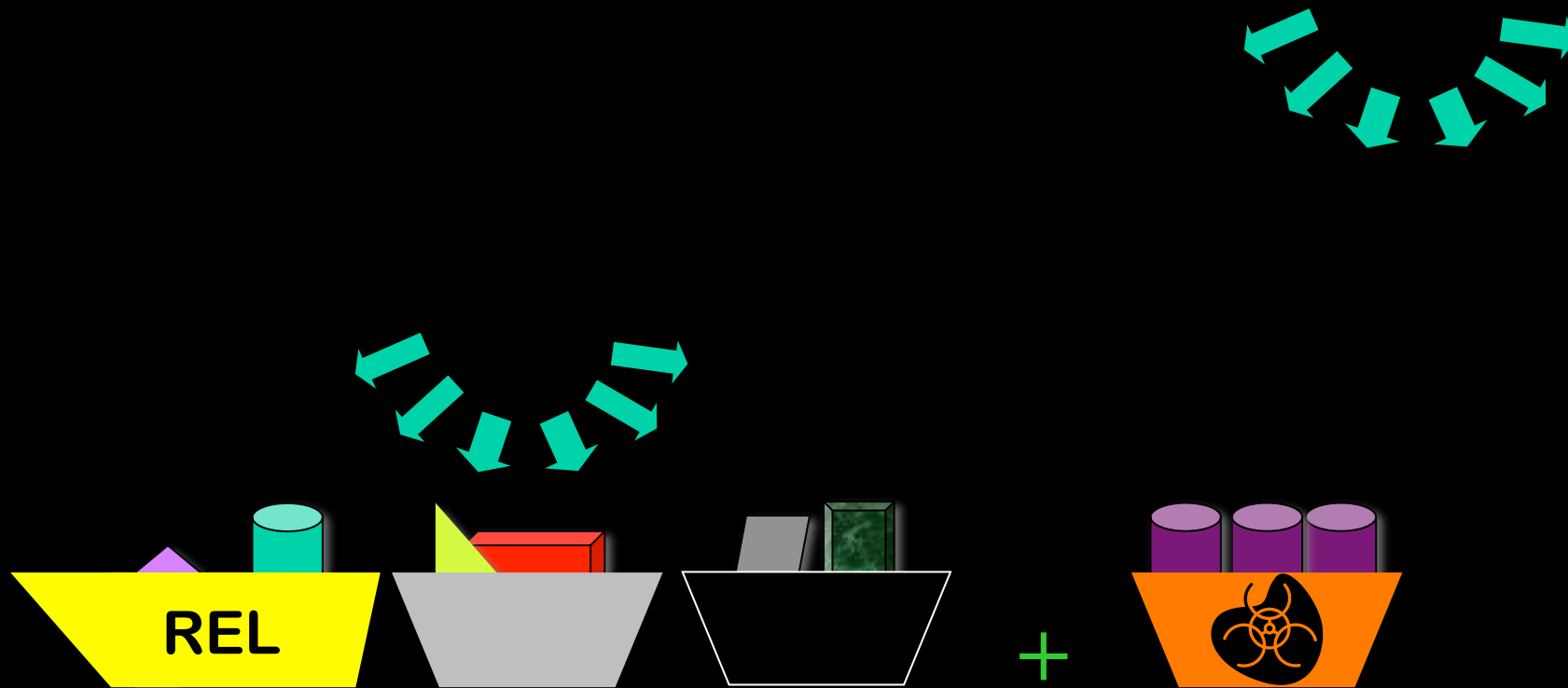
On-site Practices: Since 2004/5



2 Skip System Good
Landfill Tax driven

Since 2004
2 becomes 3
encouraged
Since 2005

On-site Practices: Since 2004/5



Compactable Packaging
(timber/paper/card/plastics)

Inert

Active

Hazardous Waste

REL:
Rear End Loader
Compactor
LA collections?

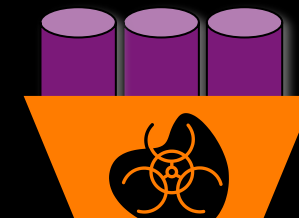
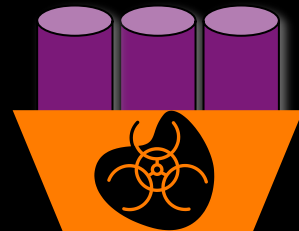
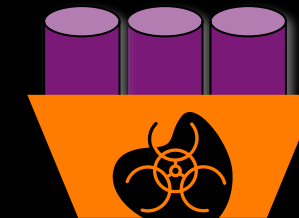
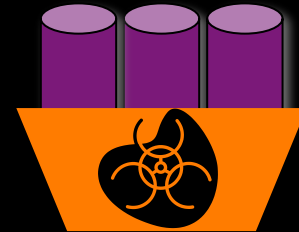
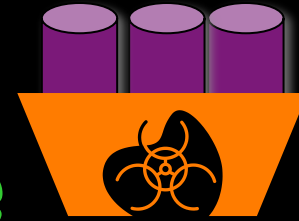
3 Skip System
Landfill Tax driven

Since 2004
3 becomes 4
encouraged
Since 2005

On-site Practices: Since 2004/5

Hazardous Waste

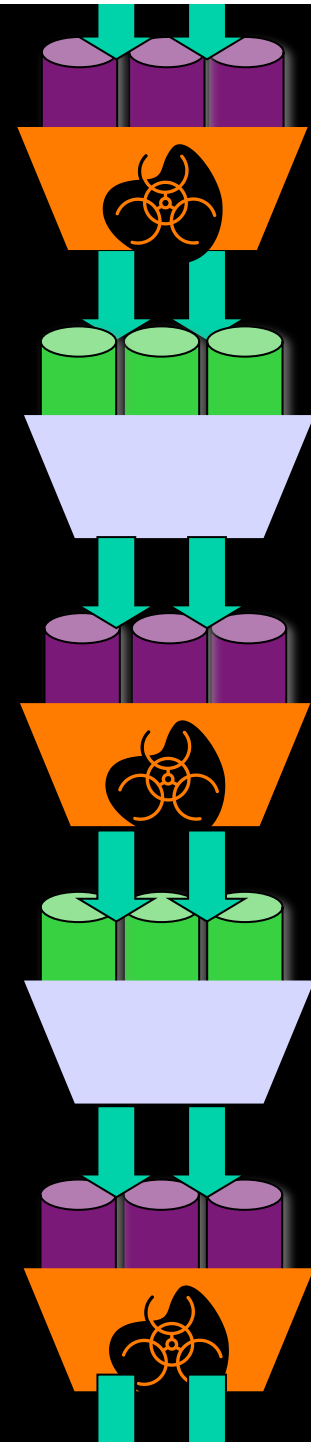
- We know Asbestos Cement
- Its all changed
- Reclassification of materials
- Paint is added to list
- Others follow: 250 added
- Need special licence to carry
- Need special landfill to tip



Hazardous Waste

“I had a dream”

- One company's HW may be another company's raw materials
- We must match supply to demand
- We need a material information exchange to link them up
- NISP is there to help
- Material Exchange is working

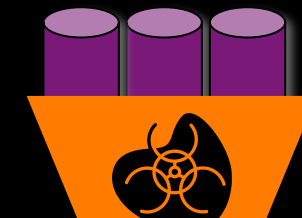
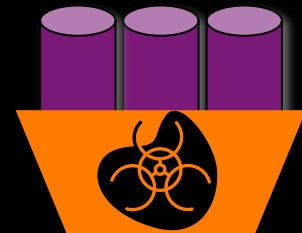
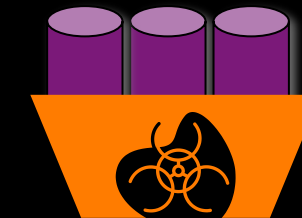
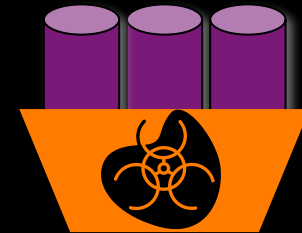
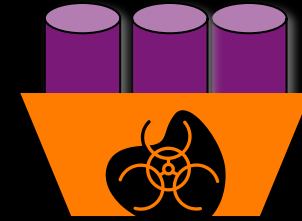


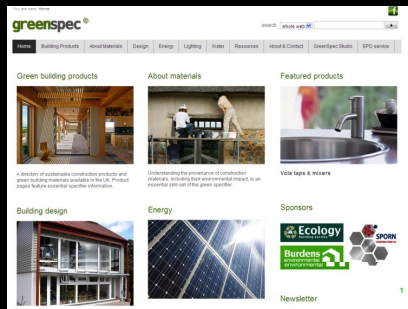
NISP National Industry Symbiosis Programme

- One man's waste is another man's resource
- Seeks out synergies between industry sectors
- www.nisp.org.uk
- Regular workshops across the country
- Very effective: UKs most successful

Deleterious Substances

- European Waste Catalogue
- Lists material that are DS
- And should be recorded on despatch tickets for skips containing DS
- All should be treated and go to HazWaste Landfill





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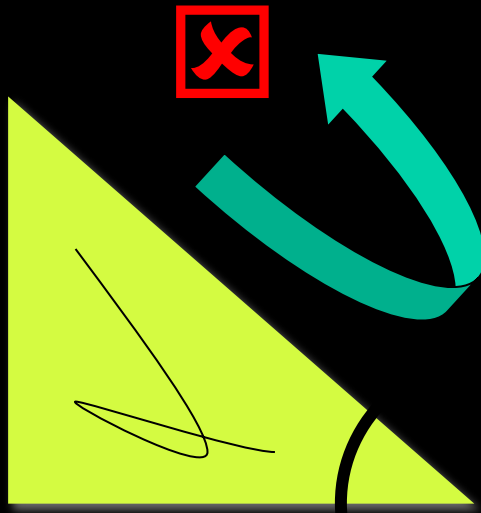
www.greenspec.co.uk

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**Reject &
Return
Defective
Materials**

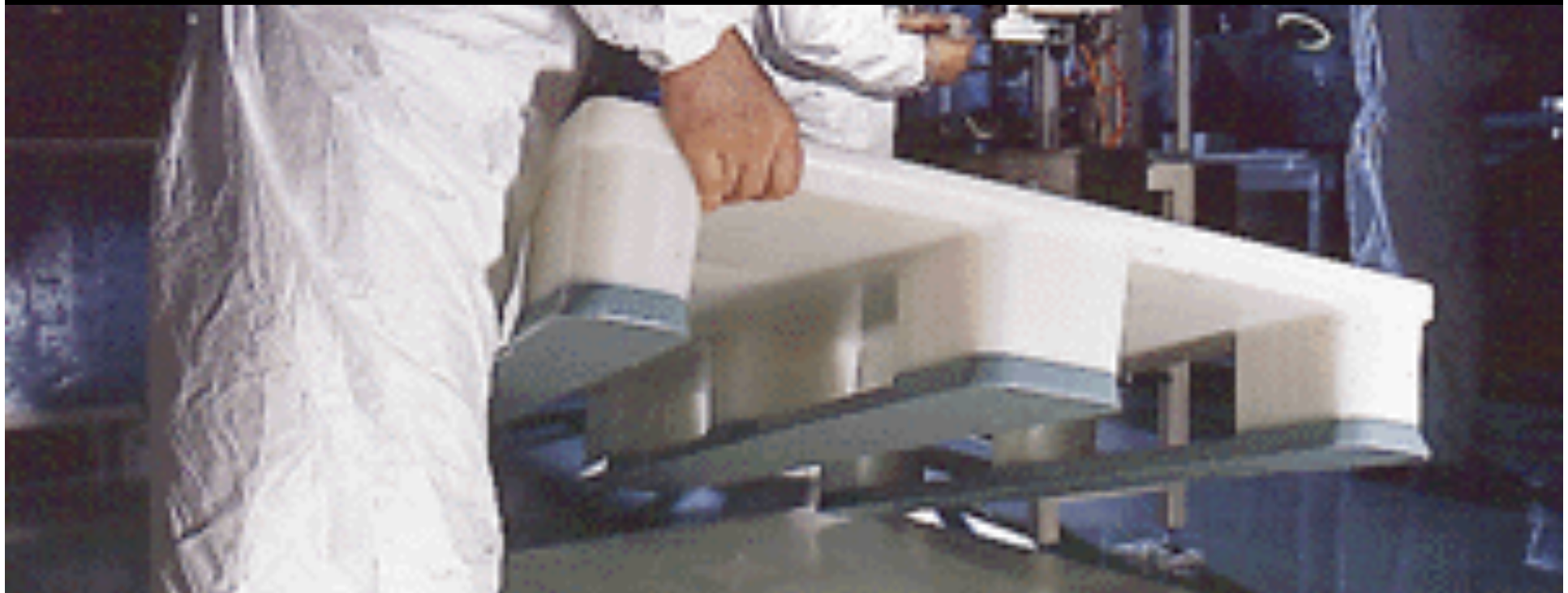
**Check all deliveries at gate
Check methods of delivery & protection
to avoid damage & waste**

Single v multiple trip pallets



- Single trip pallets do not work and destroy more materials

Recycled Plastic Pallets



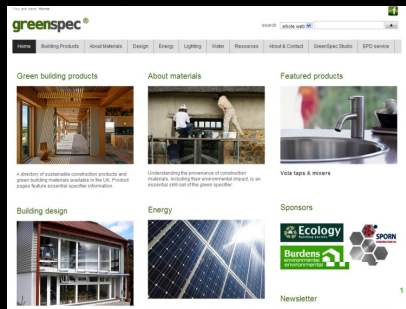


No pallets: False Economy

Reduces packaging waste for supplier
Bottom bricks and the rest go into waste skips

No bond for stability, cut straps and stack collapses in mud





Better practice

GreenSpec

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CAP'EM
Cycle Assessment Procedure for Eco-Materials



www.capem.eu

- Ground to shallow fall for drainage
- Off the ground
- Strong construction
- Weather resistant covering
- Easy access



Materials Protection:

Full hbmpp scheme

No absorbent surfaces

Corner Protection

Stability bracing

Moisture control

But:

Rain Cover needed

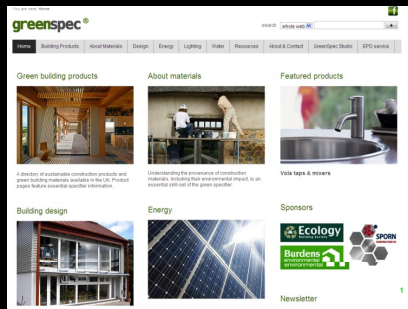
Not Remote storage

Not off the ground

Not JIT but JIC



BedZED Beddington Sutton Architect: Dr Bill Dunster



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www.greenspec.co.uk

CAP'EM

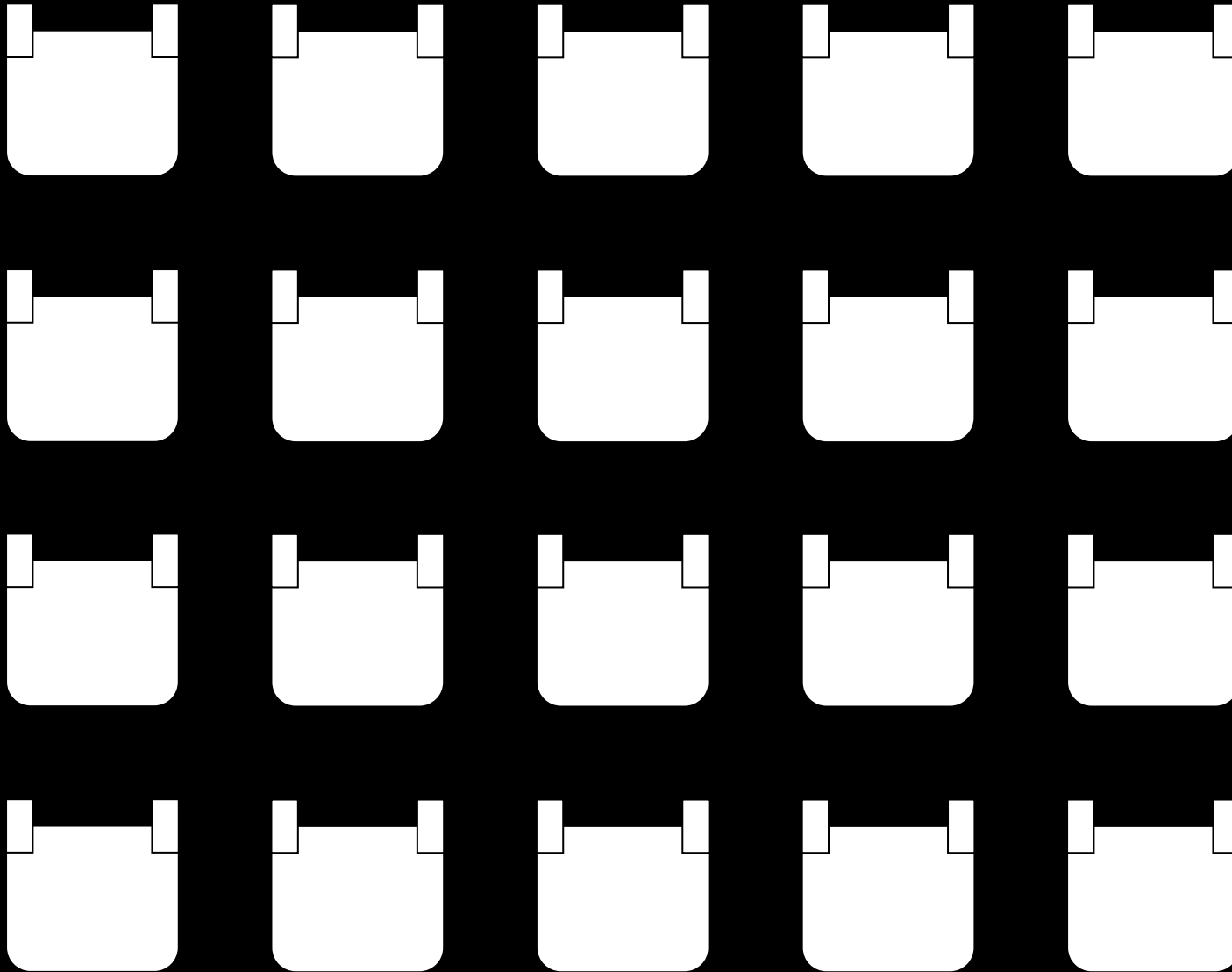
Cycle Assessment Procedure for Eco-Materials



www.capem.eu

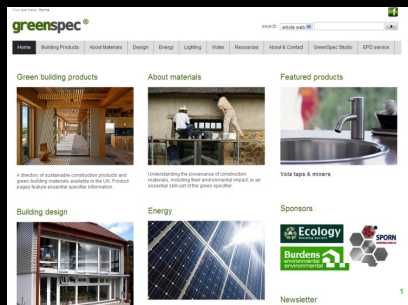


**Negotiate
Return-to-stock,
off-cut take-back,
Use-or-return,
schemes with
Supply Chain
Partners**



20 sacks at a time (full lorry load)

From one site or from a number of sites local to each other



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www.greenspec.co.uk

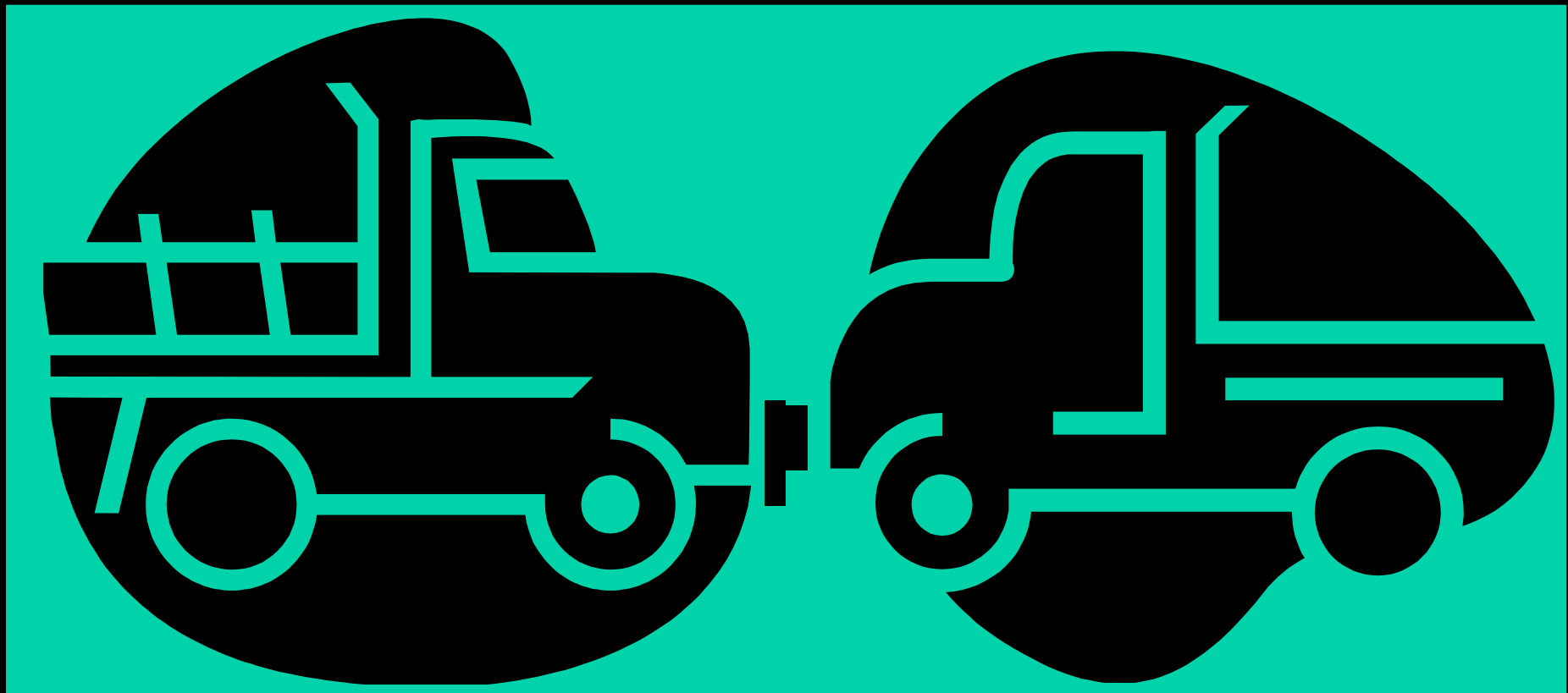
CAP'EM

Cycle Assessment Procedure for Eco-Materials



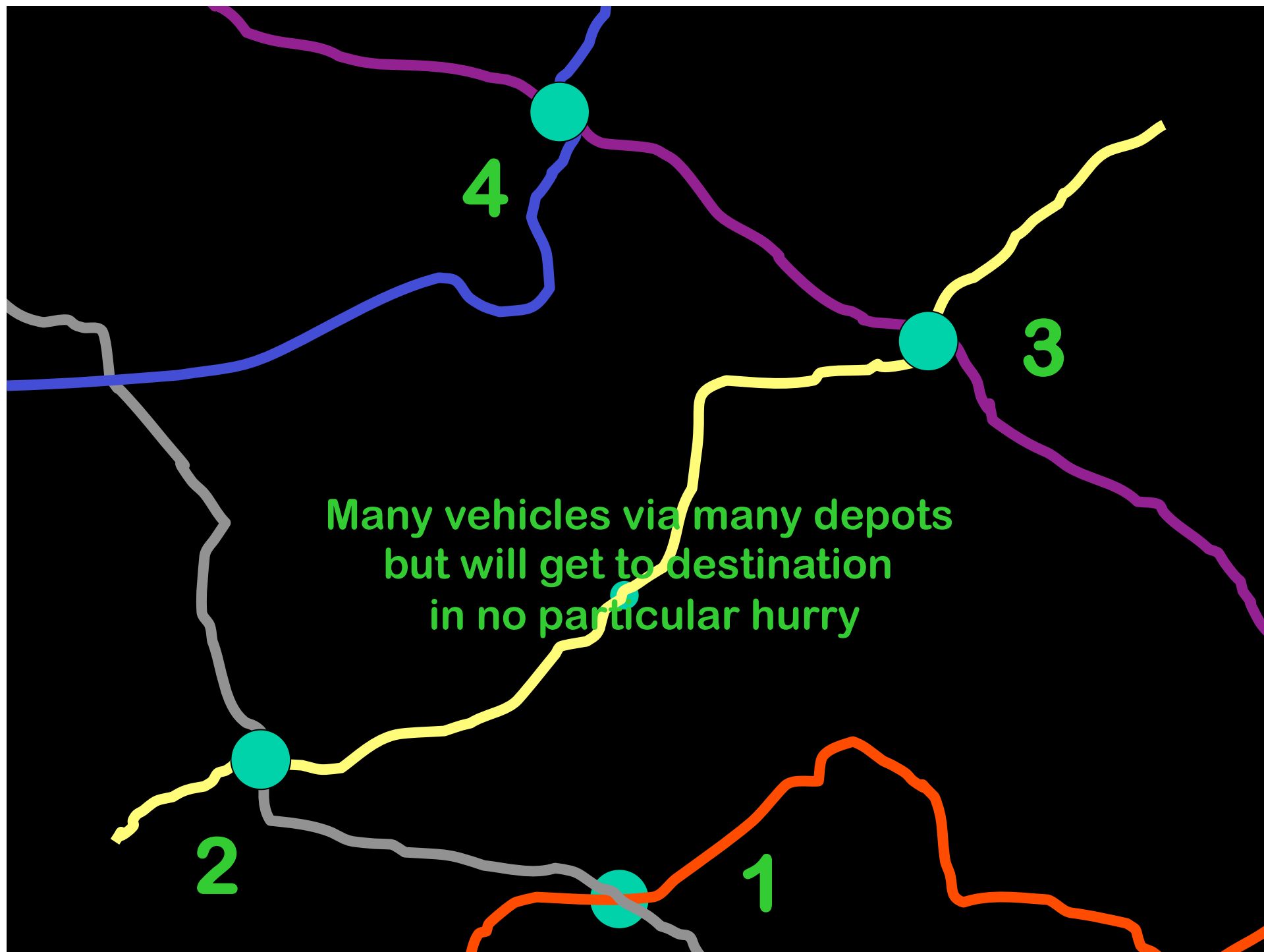
www.capem.eu

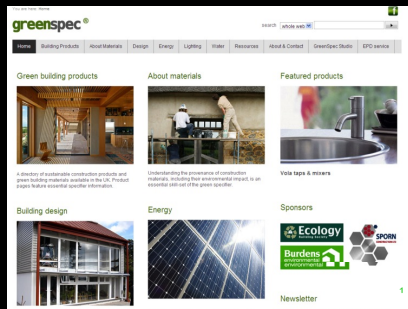
**Return
Protective
& Packaging
Materials
for PRNs
Packaging
Return Notes**



Couriers: offer take back scheme

For every laden truck in a hurry there is an unladen one coming back
Couriers offering a slow return to manufacturer service, cheap, not free





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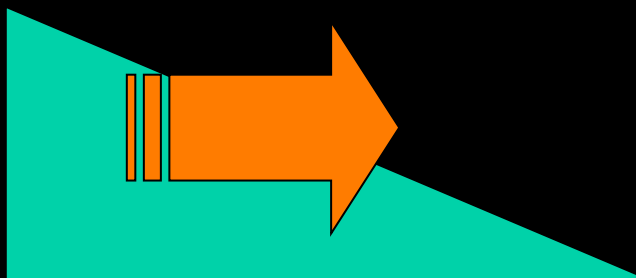
www.greenspec.co.uk

CAP'EM

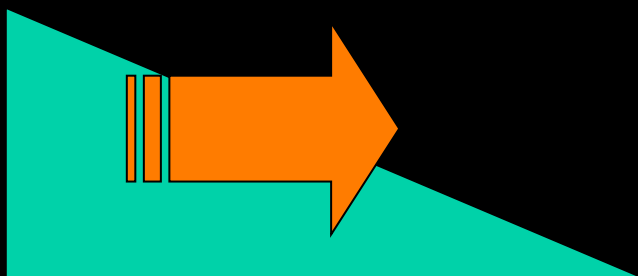
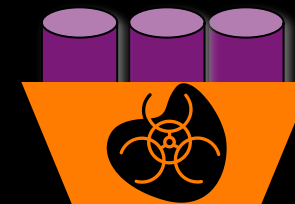
Cycle Assessment Procedure for Eco-Materials



www.capem.eu



Reduce
Demand
on use of
Materials



**Reduce
Amount**

**Hazardous waste: will need to be
pre-treated to reduce the quantity
and hazard prior to landfill**



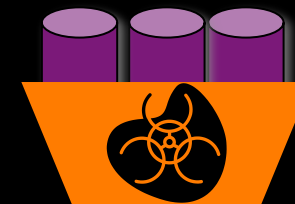
**Recycle
Materials
on-site**

**Reuse spare
materials
in use**

**Hand some spare materials to
employer for in-use repairs and
maintenance; provide storage**



**Segregate waste
local to the
point of generation
to enable reuse
on-site or offsite
And even on-site again**

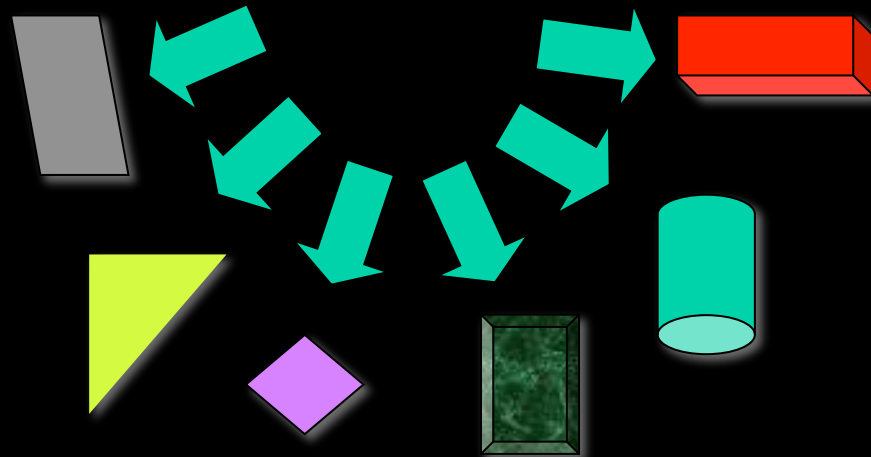


**Segregate waste
local to the
point of generation
to enable reuse
on-site or off-site**

**But try to avoid landfill
CCA, Creosote and OS treated timber
Is now classified as Hazardous waste**

Segregation

- **Brick Block Concrete (inert)**
- **Timber (active or Haz)**
- **Plasterboard**
- **Metals**
- **Glass (inert)**
- **Packaging**
 - Cardboard
 - Timber
 - Plastics
- **Plastics**





Construction waste segregation

BedZED Beddington Sutton

Architect: Bill Dunster

Metal only + Refuse only + Wood only

Signs change as demand dictates

Skips leave site with average 45% voids



Waste segregation



Greenwich Millennium Village Phase 2a



Waste Segregation: Concrete

Greenwich Millennium Village Phase 2a © NGS Inert Waste

Salvageable: Return and Reuse

- **Packaging & Protection:**

- **Pallets**

- **Crates;**

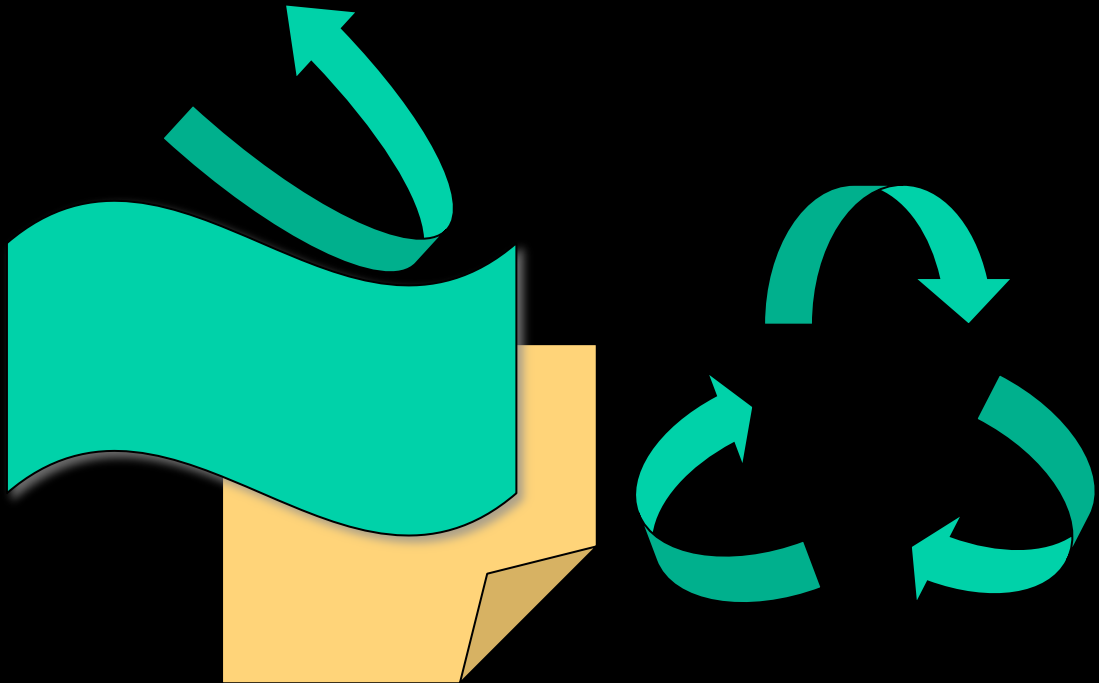
- **Wood & MDF**

- **Polystyrene**

- **Polyethylene**

- **Cling film & Bubble wrap**

- **Cardboard and Paper**





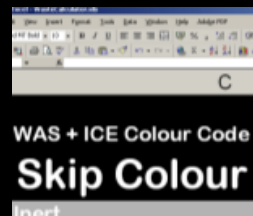
Construction Waste: Packaging

Any site across the country Packaging REL skips © CE East



www.greenspec.co.uk

Waste Skip Colour Code Labels



Informal systems, NGS A38
ICE Guide to Colour Coding, Labels, Posters
Coloured sacks

Another GreenSpec CPD file to download
See www.scribd.com/brianspecman



Hazard

Hazard

Hazard

Hazard

Hazard

Hazard

Inert

Inert

Mixed

Mixed

Mixed

Mixed

Timber

Timber

Timber

Packaging

Packaging

Packaging

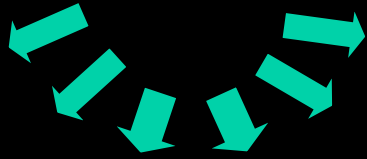
Packaging

Metal

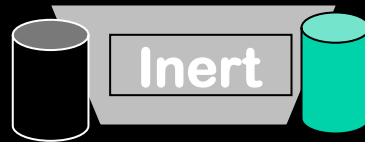
Finishes

Finishes

On-site Best Practice: Programme



Pathway past Inert Skip



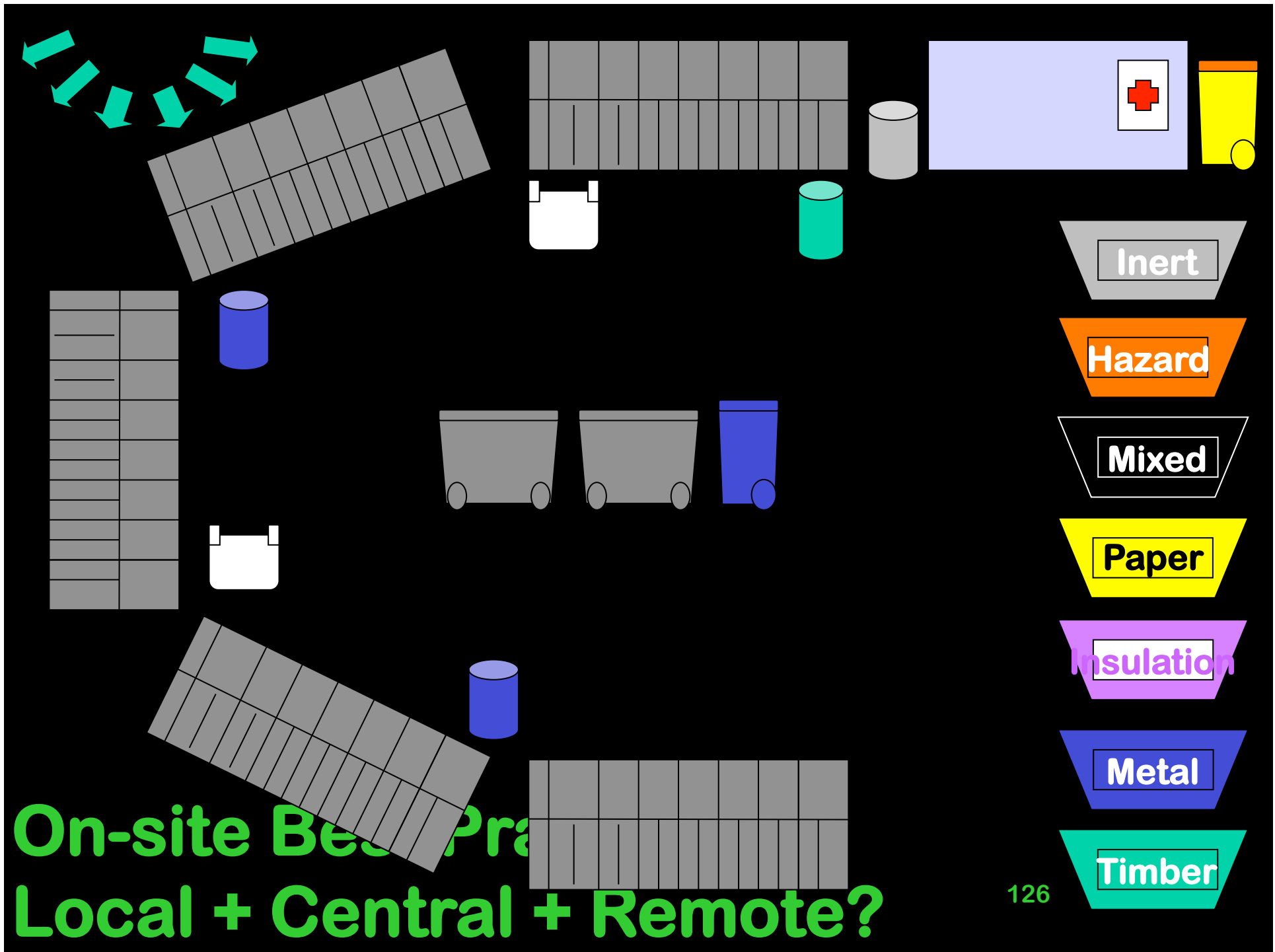
Inert Skip is spoiled by food scraps being added

Relocate Inert Skip and add waste bin in pathway

**On-site Practice:
Intelligent bin and skip locations**

Waste Diagrams for Sub-Contractors

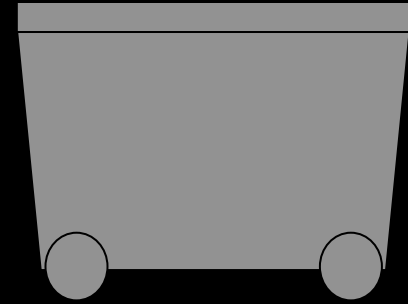
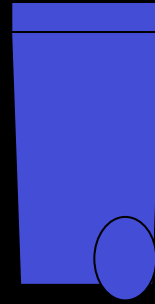
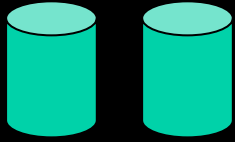




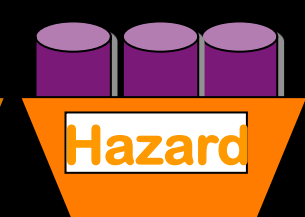
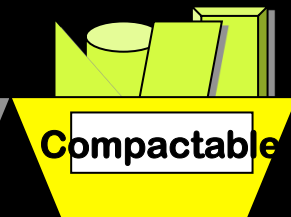
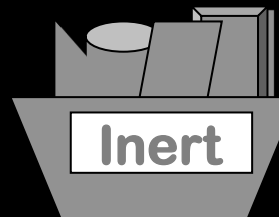
Waste segregation at the work area

- Segregate and remove alien objects
- Bins or skips
- Central or dispersed
- Colour coding & labelling
- EWC European Waste Catalogue





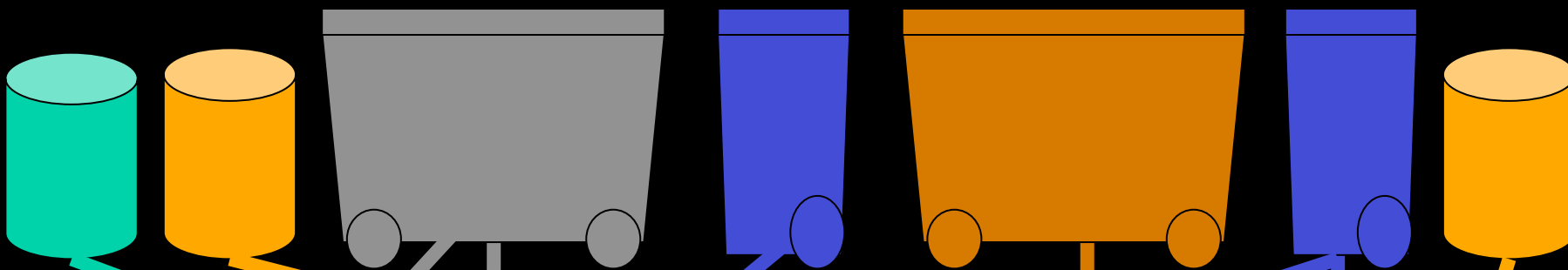
Local to point of creation



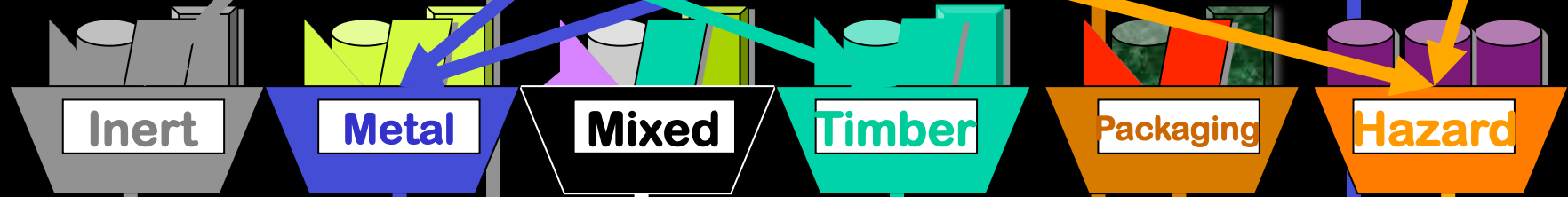
Centralised for segregated bulking



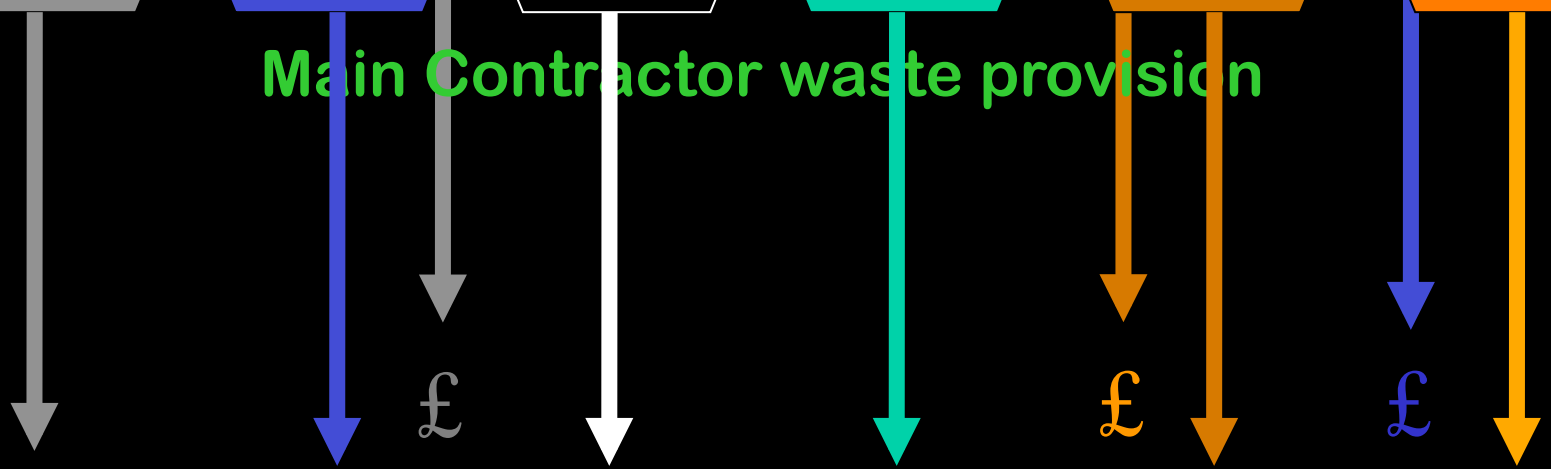
Remote for easy vehicle access



Specialist Trade or Sub-contractor waste provision



Main Contractor waste provision





Local Waste Segregation

Each sub-contractor responsible for own waste
Each generating different waste to each other
Isle of Dogs Canary Wharf © NGS

Subcontracting Waste



Client

Brief

SWMP

Employer's Agent

Brief
Employer's Requirements

Design Team

Brief
Employer's Requirements
Contract Preliminaries Specification

Suppliers

Brief
Employer's Requirements
Contract Subcontracts Specifications
Purchase orders

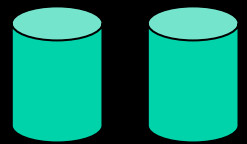
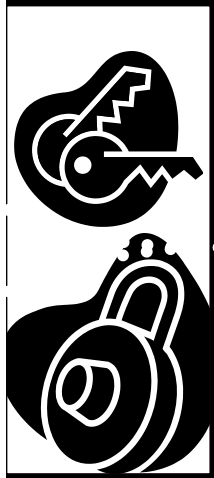
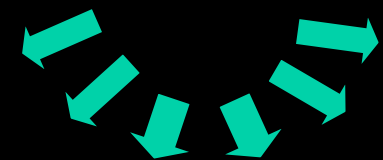
mand Cl

ply Cha

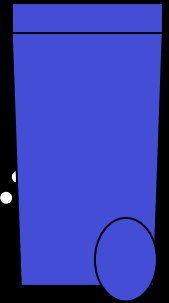
Sub-contractor

Brief
Employer's Requirements
Contract Preliminaries Specification
Subcontract Specifications

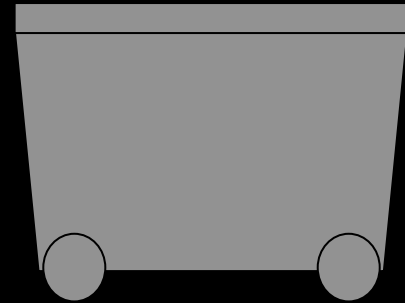
Main Contractor



Buckets



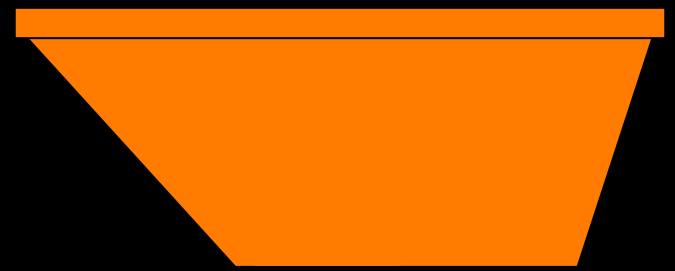
2 wheel bins



4 wheel bins



Skips with secure lids



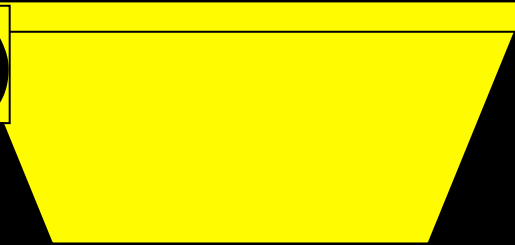
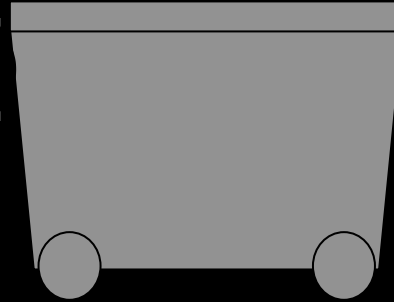
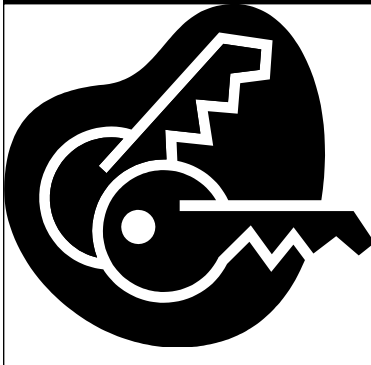
Rear End Loaders with secure lids

**On-site Best Practice:
Secure compound and containers**

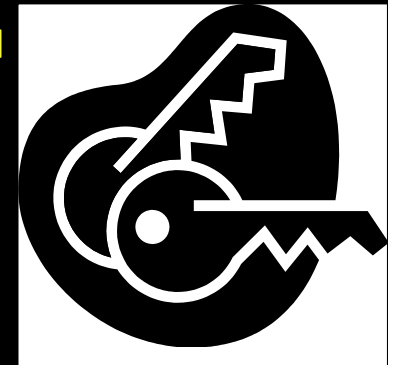
**Building
Site**

Secure Transport

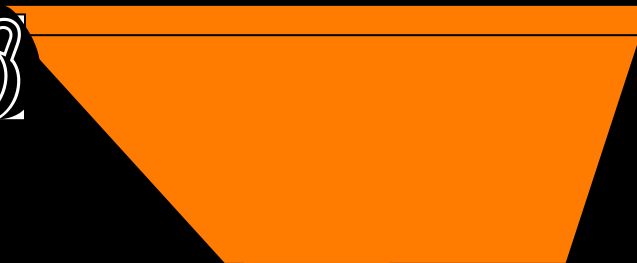
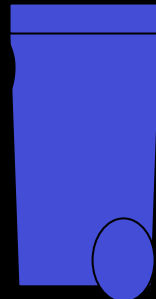
**Transfer
station**



4 wheel bins & Skips with secure lids



**Key
Holder**



2 wheel bins & Rear End Loaders with secure lids

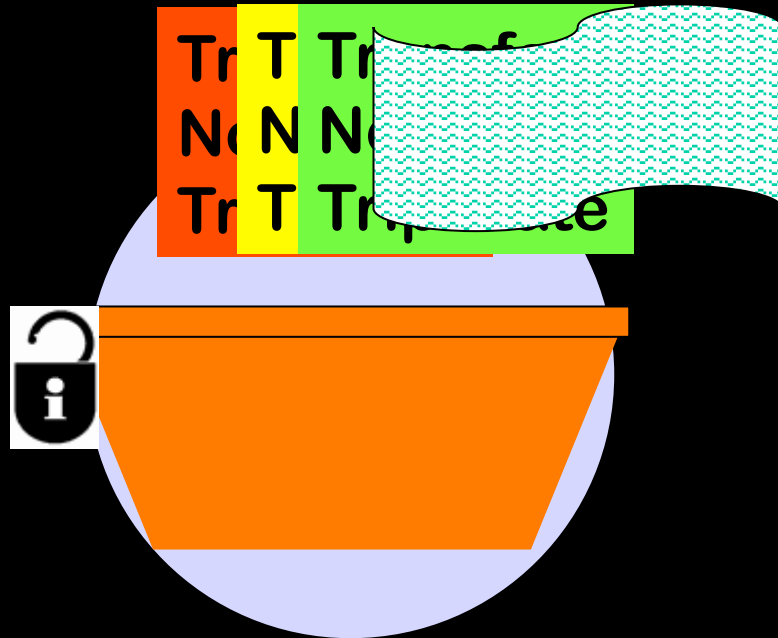
**Key
Holder**

To EA

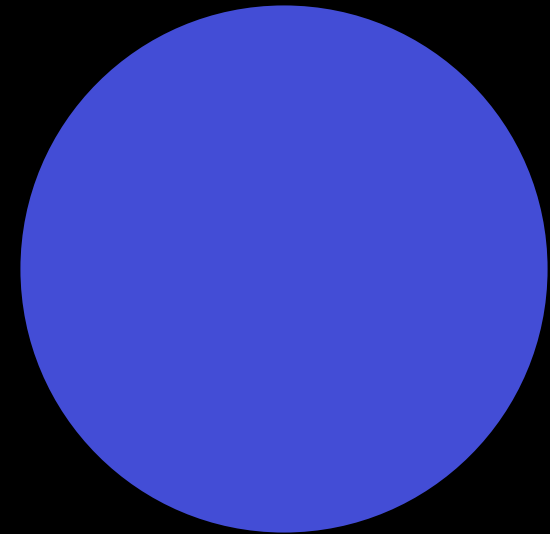
Waste Transfer Notes

Compare and pay

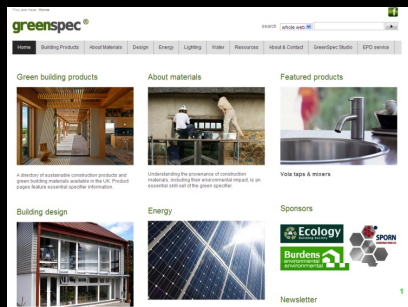
Rubber Stamp



Building Site



Segregation Site



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Waste in Refurbishment

Decent Homes
PFI projects

Waste generated: Reuse opportunities
Retrofit for a Future: possible programme





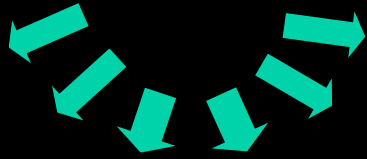
Refurbishment Waste

Any refurbishment site across the country

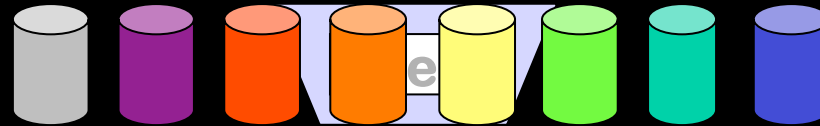


Refurbishment Waste Fly-tipped

From many refurbishment sites across the country



Window Deconstruction

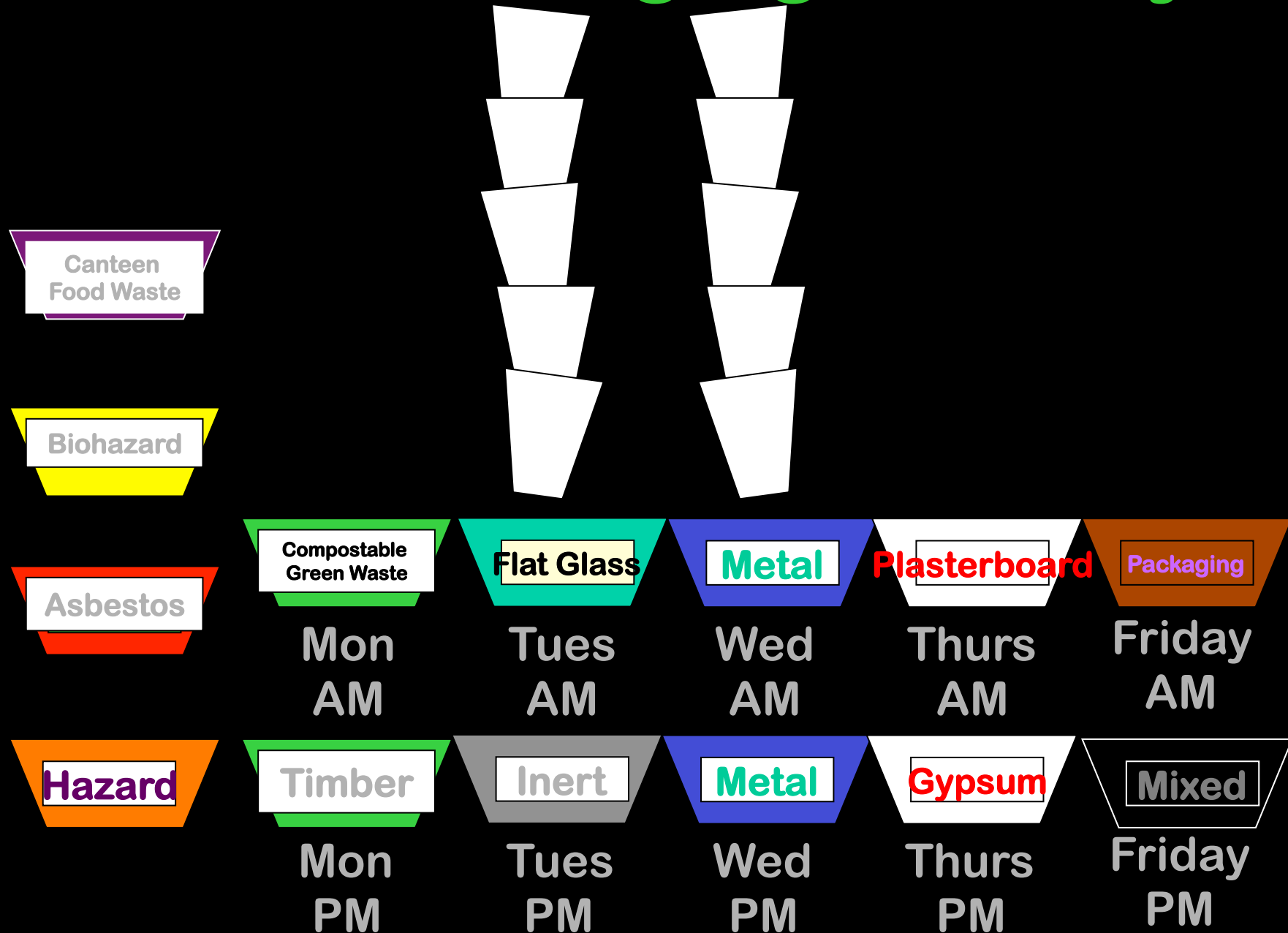


Timber, aluminium, steel or PVC frames,
Plastics, Gaskets, metal fixings, fasteners, Ironmongery, lead
cams, sealant, putty

Glass Skip just far enough away
to ensure other components
do not get into same skip

**Local but not too local:
Just out of reach**

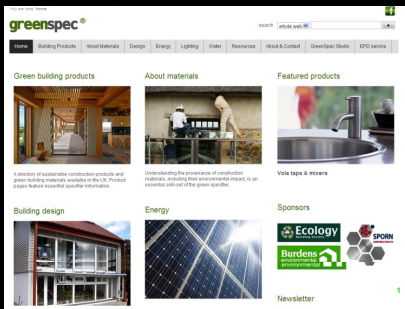
Waste Chute Segregation days





Window Dismantling

Inert spoilt by non-inert waste £300 skip to take away to mixed landfill



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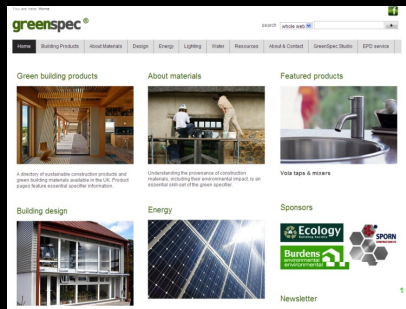
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Kier Waste Cost Diagrams (Full)

Waste Definitions
On-site or off-site segregation
Transfer & Bulking stations
Recycling/Recover/Incineration
Inert/mixed/hazardous waste streams